

**ZELEDA**



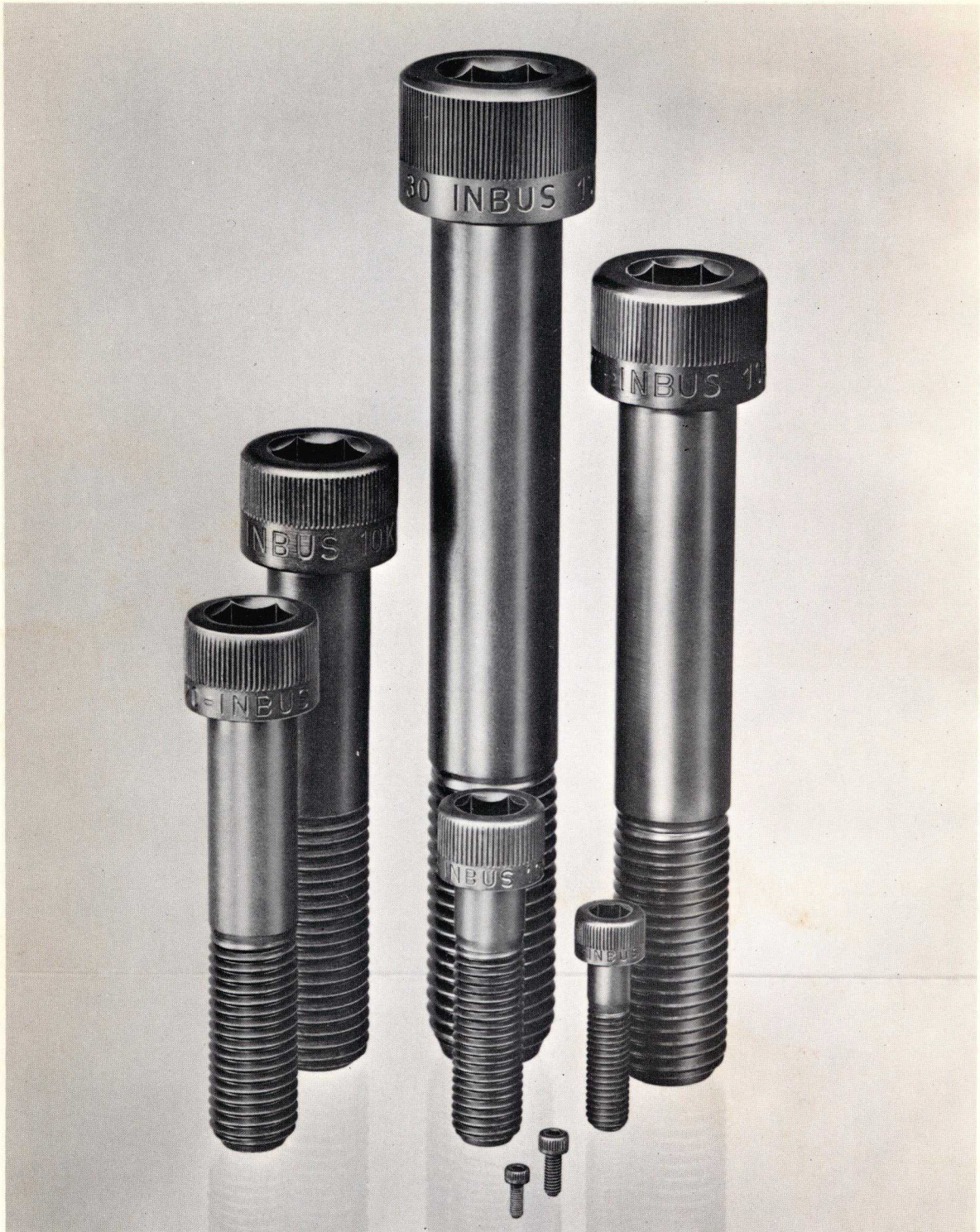
**Metric**

**CATALOG No. 8**





# **ZELEDA**



# **METRIC**



**METRIC**

# Fasteners

**HEXAGON HEAD CAP SCREWS  
SOCKET SET SCREWS  
MACHINE SCREWS**

**SOCKETS  
WRENCHES**

**SOCKET HEAD CAP SCREWS**

**NUTS  
HEX KEYS**



**HIGH SPEED**

**GROUND THREAD HAND TAPS  
ROUND DIES REAMERS DRILLS**

**MICROMETERS  
RULES GAGES INDICATORS CALIPERS**



**ZELEND  
MACHINE AND TOOLS CORP.**

66-02 AUSTIN STREET, FOREST HILLS, NEW YORK 11374  
TELEPHONE (AREA CODE 212) TW 6-2288





PARTIAL VIEW OF OUR 20,000 SQ.FT. WAREHOUSE SHOWING SOME OF OUR LARGE INVENTORY OF METRIC FASTENERS, TOOLS, TAPS, DIES, MEASURING INSTRUMENTS, etc.



SPECIAL TOOLS AND EQUIPMENT STORAGE





## INDUSTRIAL CATALOG #8

SHIPPING TERMS: F.O.B. Forest Hills. N.Y.

TERMS OF PAYMENT: Net 30 days.

BILLING: Minimum billing \$5.00 /Net.

CREDIT: New accounts receive open credit wherever satisfactory rating in Dun & Bradstreet is available, otherwise we ship C.O.D. or we ask for advance payment until credit is established.

### RETURNED GOODS POLICY:

No merchandise is to be returned without written permission from our Sales Dept. A copy of our invoice must accompany the returned goods.

No merchandise can be returned that has been out of our warehouse 45 days or longer. Merchandise that has been manufactured to order or merchandise that has been discontinued cannot be returned.

Charges on returned goods: Freight charges both ways.

10% handling charge.

5% reconditioning charge, if necessary.

Orders for special items manufactured to purchaser's specifications cannot be cancelled.

We have the right to supply 10% more or less of special manufactured items.

Non-standard or non-stock items should be fully described on orders accompanied by prints, drawings or samples.

All fasteners and cutting tools listed have right hand thread.

LEFT HAND TAPS and DIES are manufactured to order.

Additions to orders already placed will be entered as separate orders.

Please mail your order to the attention of the Sales Department to speed up processing of your order.

ZELEND A MACHINE & TOOLS CORP.



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# CONVERSION TABLE

## INCH FRACTIONS AND DECIMALS TO METRIC EQUIVALENTS

INCHES			INCHES			INCHES		
Fractions	Decimals	m m	Fractions	Decimals	m m	Fractions	Decimals	m m
-	.0004	.01	-	.4331	11	31/32	.96875	24.606
-	.004	.10	7/16	.4375	11.113	-	.9843	25
-	.01	.25	29/64	.4531	11.509	1	1.000	25.4
1/64	.0156	.397	15/32	.46875	11.906	-	1.0236	26
-	.0197	.50	-	.4724	12	1 1/32	1.0312	26.194
-	.0295	.75	31/64	.48437	12.303	1 1/16	1.062	26.988
1/32	.03125	.794	-	.492	12.5	-	1.063	27
-	.0394	1	1/2	.500	12.700	1 3/32	1.094	27.781
3/64	.0469	1.191	-	.5118	13	-	1.1024	28
-	.059	1.5	33/64	.5156	13.097	1 1/8	1.125	28.575
1/16	.0625	1.588	17/32	.53125	13.494	-	1.1417	29
5/64	.0781	1.984	35/64	.54687	13.891	1 5/32	1.156	29.369
-	.0787	2	-	.5512	14	-	1.1811	30
3/32	.094	2.381	9/16	.5625	14.288	1 3/16	1.1875	30.163
-	.0984	2.5	-	.571	14.5	1 7/32	1.219	30.956
7/64	.1093	2.776	37/64	.57812	14.684	-	1.2205	31
-	.1181	3	-	.5906	15	1 1/4	1.250	31.750
1/8	.1250	3.175	19/32	.59375	15.081	-	1.2598	32
-	.1378	3.5	39/64	.60937	15.478	1 9/32	1.281	32.544
9/64	.1406	3.572	5/8	.6250	15.875	-	1.2992	33
5/32	.15625	3.969	-	.6299	16	1 5/16	1.312	33.338
-	.1575	4	41/64	.6406	16.272	-	1.3386	34
11/64	.17187	4.366	-	.6496	16.5	1 11/32	1.344	34.131
-	.177	4.5	21/32	.65625	16.669	1 3/8	1.375	34.925
3/16	.1875	4.763	-	.6693	17	-	1.3779	35
-	.1969	5	43/64	.67187	17.066	1 13/32	1.406	35.719
13/64	.2031	5.159	11/16	.6875	17.463	-	1.4173	36
-	.2165	5.5	45/64	.7031	17.859	1 7/16	1.438	36.513
7/32	.21875	5.556	-	.7087	18	-	1.4567	37
15/64	.23437	5.953	23/32	.71875	18.256	1 15/32	1.469	37.306
-	.2362	6	-	.7283	18.5	-	1.4961	38
1/4	.2500	6.350	47/64	.73437	18.653	1 1/2	1.500	38.100
-	.2559	6.5	-	.7480	19	1 17/32	1.531	38.894
17/64	.2656	6.747	3/4	.7500	19.050	-	1.5354	39
-	.2756	7	49/64	.7656	19.447	1 9/16	1.562	39.688
9/32	.28125	7.144	25/32	.78125	19.844	-	1.5748	40
-	.2953	7.5	-	.7874	20	1 19/32	1.594	40.481
19/64	.29687	7.541	51/64	.79687	20.241	-	1.6142	41
5/16	.3125	7.938	13/16	.8125	20.638	1 5/8	1.625	41.275
-	.3150	8	-	.8268	21	-	1.6535	42
21/64	.3281	8.334	53/64	.8281	21.034	1 21/32	1.6562	42.069
-	.335	8.5	27/32	.84375	21.431	1 11/16	1.6875	42.863
11/32	.34375	8.731	55/64	.85937	21.828	-	1.6929	43
-	.3543	9	-	.8662	22	1 23/32	1.719	43.656
23/64	.35937	9.128	7/8	.8750	22.225	-	1.7323	44
-	.374	9.5	57/64	.8906	22.622	1 3/4	1.750	44.450
3/8	.3750	9.525	-	.9055	23	-	1.7717	45
25/64	.3906	9.922	29/32	.90625	23.019	1 25/32	1.781	45.244
-	.3937	10	59/64	.92187	23.416	-	1.8110	46
13/32	.4062	10.319	15/16	.9375	23.813	1 13/16	1.8125	46.038
-	.413	10.5	-	.9449	24	1 27/32	1.844	46.831
27/64	.42187	10.716	61/64	.9531	24.209	-	1.8504	47



# CONVERSION TABLE

## INCH FRACTIONS AND DECIMALS TO METRIC EQUIVALENTS

INCHES		m m	INCHES		m m	INCHES		m m
Fractions	Decimals		Fractions	Decimals		Fractions	Decimals	
1 7/8	1.875	47.625	-	3.0709	78	-	4.7244	120
-	1.8898	48	-	3.1102	79	4 3/4	4.750	120.650
1 29/32	1.9062	48.419	3 1/8	3.125	79.375	4 7/8	4.875	123.825
-	1.9291	49	-	3.1496	80	-	4.9212	125
1 15/16	1.9375	49.213	3 3/16	3.1875	80.963	5	5.000	127
-	1.9685	50	-	3.1890	81	-	5.1181	130
1 31/32	1.969	50.006	-	3.2283	82	5 1/4	5.250	133.350
2	2.000	50.800	3 1/4	3.250	82.550	5 1/2	5.500	139.700
-	2.0079	51	-	3.2677	83	-	5.5118	140
-	2.0472	52	-	3.3071	84	5 3/4	5.750	146.050
2 1/16	2.062	52.388	3 5/16	3.312	84.1377	-	5.9055	150
-	2.0866	53	-	3.3464	85	6	6.000	152.400
2 1/8	2.125	53.975	3 3/8	3.375	85.725	6 1/4	6.250	158.750
-	2.126	54	-	3.3858	86	-	6.2992	160
-	2.165	55	-	3.4252	87	6 1/2	6.500	165.100
2 3/16	2.1875	55.563	3 7/16	3.438	87.313	-	6.6929	170
-	2.2047	56	-	3.4646	88	6 3/4	6.750	171.450
-	2.244	57	3 1/2	3.500	88.900	7	7.000	177.800
2 1/4	2.250	57.150	-	3.5039	89	-	7.0866	180
-	2.2835	58	-	3.5433	90	-	7.4803	190
2 5/16	2.312	58.738	3 9/16	3.562	90.4877	7 1/2	7.500	190.500
-	2.3228	59	-	3.5827	91	-	7.8740	200
-	2.3622	60	-	3.622	92	8	8.000	203.200
2 3/8	2.375	60.325	3 5/8	3.625	92.075	-	8.2677	210
-	2.4016	61	-	3.6614	93	8 1/2	8.500	215.900
2 7/16	2.438	61.913	3 11/16	3.6875	93.663	-	8.6614	220
-	2.4409	62	-	3.7008	94	9	9.000	228.600
-	2.4803	63	-	3.7401	95	-	9.0551	230
2 1/2	2.500	63.500	3 3/4	3.750	95.250	-	9.4488	240
-	2.5197	64	-	3.7795	96	9 1/2	9.500	241.300
-	2.559	65	3 13/16	3.8125	96.838	-	9.8425	250
2 9/16	2.562	65.088	-	3.8189	97	10	10.000	254.000
-	2.5984	66	-	3.8583	98	-	10.2362	260
2 5/8	2.625	66.675	3 7/8	3.875	98.425	-	10.6299	270
-	2.638	67	-	3.8976	99	11	11.000	279.400
-	2.6772	68	-	3.9370	100	-	11.0236	280
2 11/16	2.6875	68.263	3 15/16	3.9375	100.013	-	11.4173	290
-	2.7165	69	-	3.9764	101	-	11.8110	300
2 3/4	2.750	69.850	4	4.000	101.600	12	12.000	304.800
-	2.7559	70	4 1/16	4.062	103.188	13	13.000	330.200
-	2.7953	71	4 1/8	4.125	104.775	-	13.7795	350
2 13/16	2.8125	71.438	-	4.1338	105	14	14.000	355.600
-	2.8346	72	4 3/16	4.1875	106.363	15	15.000	381
-	2.8740	73	4 1/4	4.250	107.950	-	15.7480	400
2 7/8	2.875	73.025	4 5/16	4.312	109.538	16	16.000	406.400
-	2.9134	74	-	4.3307	110	17	17.000	431.800
2 15/16	2.9375	74.613	4 3/8	4.375	111.125	-	17.7165	450
-	2.9527	75	4 7/16	4.438	112.713	18	18.000	457.200
-	2.9921	76	4 1/2	4.500	114.300	19	19.000	482.600
3	3.000	76.200	-	4.5275	115	-	19.6850	500
-	3.0315	77	4 9/16	4.562	115.888	20	20.000	508
3 1/16	3.062	77.788	4 5/8	4.625	117.475	21	21.000	533.400





# METRIC

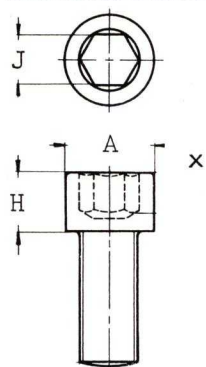
## MICRO SOCKET HEAD CAP SCREWS

**DIN 912**

MATERIAL : HEAT TREATED ALLOY STEEL

10.9 = 10K

DIA	mm	M 1.4	M 1.7	M 2	M 2.3	M 2.6	M 3
	INCH	.055	.067	.079	.091	.102	.118
PITCH	mm	.030	.035	.040	0.40	0.45	0.50
THREADS PER INCH		85	73	63	63	56	51
J = SIZE OF HEX KEY	mm	1.27	1.5	1.5	2	2	2.5
A = HEAD DIAMETER	mm	2.6	3	3.5	4	4.5	5.5
H = HEIGHT OF HEAD	mm	1.4	1.7	2	2.3	2.6	3
LENGTH UNDER HEAD							
	mm	Inches					
	2	.079	ft				
	2.5	.098	ft	ft			
	3	.118	ft	ft	ft		
	4	.157	ft	ft	ft	ft	
	5	.197	ft	ft	ft	ft	ft
	6	.236	ft	ft	ft	ft	ft
	8	.315		ft	ft	ft	ft
	10	.394		ft	ft	ft	ft
	12	.472		ft	ft	ft	ft
	15	.591			ft	ft	ft
	18	.709					pt
	20	.787					pt
	22	.866					pt
	25	.984					pt
	30	1.181					pt
	35	1.378					pt
	40	1.575					pt



HOW TO ORDER : M 2.3 x 8 DIN 912 ( 2.3 =diameter; 8 = length under head)

ft = fully threaded      pt = partly threaded

**10.9** (10K)

SOCKET HEAD CAP SCREWS IN LENGTH OF 14 mm & 16 mm ARE IN STOCK



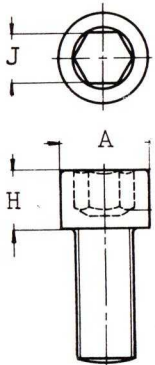
## METRIC

# DIN 912

## SOCKET HEAD CAP SCREWS

MATERIAL : HEAT TREATED ALLOY STEEL      10.9 = 10K

DIA	mm INCH	M 4	M 5	M 6	M 8	M 10	M 12	M 14
		.1575	.1969	.2362	.3150	.3937	.4724	.5512
PITCH	mm	0.70	0.80	1.00	1.25	1.50	1.75	2.00
THREADS PER INCH		36	32	25	20	17	14.5	12.5
J = SIZE OF HEX KEY	mm	3	4	5	6	8	10	12
A = HEAD DIAMETER	mm	7	9	10	13	16	18	22
H = HEIGHT OF HEAD	mm	4	5	6	8	10	12	14



**LENGTH  
UNDER HEAD**

mm	Inches
5	.197
6	.236
8	.315
10	.394
12	.472
15	.591
18	.709
20	.787
22	.866
25	.984
30	1.181
35	1.378
40	1.575
45	1.772
50	1.969
55	2.165
60	2.362
65	2.559
70	2.756
75	2.953
80	3.150
90	3.543
100	3.937
110	4.331
120	4.724
130	5.118
140	5.512
150	5.906
160	6.299
180	7.087
200	7.874

STAINLESS STEEL SOCKET HEAD CAP SCREWS are in stock  
Prices on request

[illegible]

**10.9<sub>(10 K)</sub>**

HEX KEYS ON PAGE 19

HOW TO ORDER : M 4 x 60 DIN 912

ft = Fully threaded      pt = Partly threaded



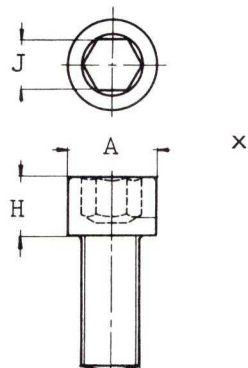
# METRIC

## SOCKET HEAD CAP SCREWS

## DIN 912

MATERIAL : HEAT TREATED ALLOY STEEL    10.9 = 10K

<div> <div>DIA</div> <div>mm</div> <div>INCH</div> </div>		M 16	M 18	M 20	M 22	M 24	M 27	M 30
		.6299	.7087	.7874	.8682	.945	1.063	1.181
PITCH	mm	2.00	2.50	2.50	2.50	3.00	3.00	3.50
THREADS PER INCH		12.5	10	10	10	8.5	8.5	7-1/3
J = SIZE OF HEX KEY	mm	14	14	17	17	19	19	22
A = HEAD DIAMETER	mm	24	27	30	33	36	40	45
H = HEIGHT OF HEAD	mm	16	18	20	22	24	27	30



**LENGTH  
UNDER HEAD**

mm	Inches
20	.787
22	.866
25	.984
30	1.181
35	1.378
40	1.575
45	1.772
50	1.969
55	2.165
60	2.362
65	2.559
70	2.756
75	2.953
80	3.150
90	3.543
100	3.937
110	4.331
120	4.724
130	5.118
140	5.512
150	5.906
160	6.299
180	7.087
200	7.874
210	8.268
220	8.661
230	9.055
240	9.449
250	9.843
260	10.236
280	11.024
300	11.811

STAINLESS STEEL SOCKET HEAD CAP SCREWS  
are in stock.Prices on request.

ft						
ft						
ft						
ft	ft	ft				
ft	ft	ft				
ft	ft	ft	ft	ft		
pt	ft	ft	ft	ft	ft	ft
pt	pt	pt	ft	ft	ft	ft
pt	pt	pt	pt	ft	ft	ft
pt	pt	pt	pt	pt	pt	pt
pt	pt	pt	pt	pt	pt	pt
pt	pt	pt	pt	pt	pt	pt
pt	pt	pt	pt	pt	pt	pt
pt	pt	pt	pt	pt	pt	pt
pt	pt	pt	pt	pt	pt	pt
pt	pt	pt	pt	pt	pt	pt
pt	pt	pt	pt	pt	pt	pt
pt	pt	pt	pt	pt	pt	pt
pt		pt		pt	pt	pt
pt		pt		pt	pt	pt
pt		pt		pt	pt	pt
pt		pt		pt	pt	pt
pt		pt		pt	pt	pt
pt		pt		pt	pt	pt
				pt		
				pt		
				pt		
				pt		
				pt		

# 10.9<sub>(10 K)</sub>



HEX KEYS on PAGE 19

HOW TO ORDER : M 24 x 200 DIN 912

ft = Fully threaded      pt = Partly threaded





# METRIC

## DIN 912 SOCKET HEAD CAP SCREWS

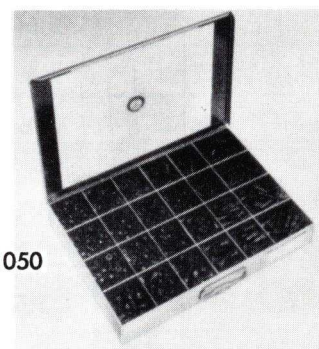
### ASSORTMENTS

MATERIAL: HEAT TREATED ALLOY STEEL

SIZE		Pcs	SIZE		Pcs
Dia	Length mm		Dia	Length mm	
M 4 x 10		50	M 6 x 15		50
M 4 x 15		50	M 6 x 20		50
M 4 x 20		50	M 6 x 25		50
M 4 x 25		50	M 6 x 30		50
M 4 x 30		50	M 6 x 35		50
M 4 x 35		50	M 6 x 40		50
M 5 x 15		50	M 8 x 15		25
M 5 x 20		50	M 8 x 20		25
M 5 x 25		50	M 8 x 25		25
M 5 x 30		50	M 8 x 30		25
M 5 x 35		50	M 8 x 35		25
M 5 x 40		50	M 8 x 40		25

(In metal box 13½" x 9½" x 2¼")

no 1050



SET NO. 1050

no 250

SIZE		Pcs	SIZE		Pcs
Dia	Length mm		Dia	Length mm	
M 4 x 10		25	M 6 x 15		10
M 4 x 15		25	M 6 x 20		10
M 4 x 20		25	M 6 x 25		10
M 4 x 25		25	M 6 x 30		10
M 5 x 15		25	M 8 x 20		10
M 5 x 20		25	M 8 x 25		10
M 5 x 25		10	M 8 x 30		10
M 5 x 30		10	M 8 x 40		10

Hex Keys, 2 of each: 3mm, 4mm, 5mm, 6mm.  
Assorted in plastic box.

no 280

SIZE		Pcs	SIZE		Pcs.
Dia	Length mm		Dia	Length mm	
M 6 x 15		25	M 10 x 30		10
M 6 x 20		25	M 10 x 35		10
M 6 x 25		25	M 10 x 40		10
M 6 x 30		25	M 10 x 50		5
M 6 x 35		25	M 12 x 25		10
M 8 x 20		25	M 12 x 30		10
M 8 x 25		10	M 12 x 35		10
M 8 x 30		10	M 12 x 40		5
M 8 x 35		10	M 12 x 50		5
M 8 x 40		10	M 12 x 60		5
M 10 x 25		10			

Hex Keys Din 911, 2 of each: 5 mm, 6 mm, 8 mm, 10 mm-  
Assorted in Plastic Box.



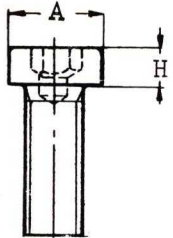
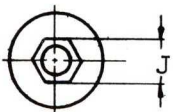


**DIN 6912****WITH HEX KEY GUIDE**

# LOW HEAD METRIC SOCKET HEAD CAP SCREWS

MATERIAL : HEAT TREATED ALLOY STEEL

DIA	mm INCH	M 5	M 6	M 8	M 10	M 12	M 14
		.197	.236	.315	.394	.472	.551
PITCH	mm	0.80	1.00	1.25	1.50	1.75	2.00
THREADS PER INCH		32	25	20	17	14.5	12.5
J = SIZE OF HEX KEY	mm	4	5	6	8	10	12
A = HEAD DIAMETER	mm	9	10	13	16	18	22
H = HEIGHT OF HEAD	mm	3.5	4	5	6.5	7.5	8.5

**LENGTH  
UNDER HEAD**

mm    Inches

10	.394
12	.472
15	.591
20	.787
25	.984
30	1.181
35	1.378
40	1.575
50	1.969
60	2.362
70	2.756
80	3.150
90	3.543
100	3.937
110	4.331
120	4.724

HEX KEYS WITH GUIDE DIN 6911 ON PAGE 19

ft = Fully Threaded      pt = Partly threaded

ft	ft	ft			
ft	ft	ft			
ft	ft	ft	ft	ft	
pt	ft	ft	ft	ft	ft
pt	pt	ft	ft	ft	ft
pt	pt	pt	ft	ft	ft
pt	pt	pt	pt	pt	ft
pt	pt	pt	pt	pt	pt
pt	pt	pt	pt	pt	pt
		pt	pt	pt	pt
		pt	pt	pt	pt
		pt	pt	pt	pt
					pt
					pt

HOW TO ORDER: M 6 x 40 DIN 6912  
M 14 x 120 DIN 6912





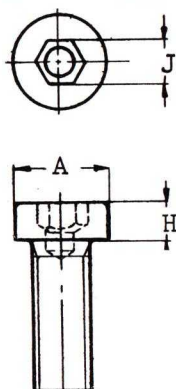
# METRIC LOW HEAD SOCKET HEAD CAP SCREWS

DIN 6912

WITH HEX KEY GUIDE

MATERIAL : HEAT TREATED ALLOY STEEL

DIA	mm INCH	M 16	M 18	M 20	M 22	M 24
		.630	.709	.787	.866	.945
PITCH	mm	2.00	2.50	2.50	2.50	3.00
THREADS PER INCH		12.5	10	10	10	8.5
J = SIZE OF HEX KEYS	mm	14	14	17	17	19
A = HEAD DIAMETER	mm	24	27	30	33	36
H = HEIGHT OF HEAD	mm	10	11	12	13	14



## LENGTH UNDER HEAD

mm Inches

20	.787
25	.984
30	1.181
35	1.378
40	1.575
50	1.969
60	2.362
70	2.756
80	3.150
90	3.543
100	3.937
110	4.331
120	4.724
130	5.118
140	5.512
150	5.906
160	6.299
180	7.087
200	7.874



USE HEX KEYS WITH GUIDE DIN 6911

ft = Fully threaded      pt = Partly threaded

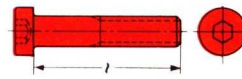
ft				
ft	ft			
ft	ft	ft		
ft	ft	ft	ft	
ft	ft	ft	ft	ft
pt	pt	pt	ft	ft
pt	pt	pt	pt	pt
pt	pt	pt	pt	pt
pt	pt	pt	pt	pt
pt	pt	pt	pt	pt
pt	pt	pt	pt	pt
pt	pt	pt	pt	pt
pt	pt	pt	pt	pt
pt	pt	pt	pt	pt
pt	pt	pt	pt	pt
		pt	pt	pt
		pt	pt	pt
			pt	pt

HOW TO ORDER : M 16 x 50 DIN 6912  
HEX KEYS DIN 6911 ON PAGE 19



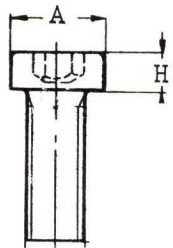
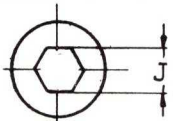


# METRIC LOW HEAD SOCKET HEAD CAP SCREWS



8.8 (8 G)  
DIN 7984

DIA	mm Inches	M 3	M 4	M 5	M 6	M 8	M 10	M 12	M 16	M 20	M 24
		.118	.158	.197	.236	.315	.394	.472	.630	.787	.945
PITCH	mm	0.50	0.70	0.80	1.00	1.25	1.50	1.75	2.00	2.50	3.00
THREADS PER INCH	mm	51	36	32	25	20	17	14½	12½	10	8½
J = SIZE OF HEX KEY	mm	2	2.5	3	4	5	7	8	12	14	17
A = HEAD DIAMETER	mm	5.5	7	9	10	13	16	18	24	30	36
H = HEIGHT OF HEAD	mm	2	2.8	3.5	4	5	6	7	9	11	13



LENGTH UNDER HEAD		MATERIAL: HEAT TREATED ALLOY STEEL									
mm	Inches										
5	.197										
6	.236										
8	.315										
10	.394										
12	.472										
15	.591										
18	.709										
20	.787										
22	.866										
25	.984										
28	1.102										
30	1.181										
35	1.378										
40	1.575										
45	1.772										
50	1.969										
55	2.165										
60	2.362										
65	2.559										
70	2.756										
75	2.953										
80	3.150										
85	3.346										
90	3.543										
100	3.937										
110	4.331										
120	4.724										

NOT AVAILABLE

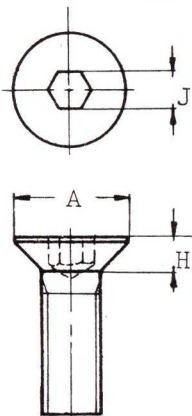
NOT AVAILABLE



**METRIC****DIN 7991****FLAT HEAD SOCKET CAP SCREWS**

MATERIAL : HEAT TREATED ALLOY STEEL

DIA <b>mm</b> INCH	M 3	M 4	M 5	M 6	M 8	M 10	M 12
	.118	.158	.197	.236	.315	.394	.472
PITCH mm	0.50	0.70	0.80	1.00	1.25	1.50	1.75
THREADS PER INCH	51	36	32	25	20	17	14.5
J = SIZE OF HEX KEYS mm	2	2.5	3	4	5	6	8
A = HEAD DIAMETER mm	6	8	10	12	16	20	24
H = HEIGHT OF HEAD mm	1.7	2.3	2.8	3.3	4.4	5.5	6.5

**LENGTH**

mm	Inches
8	.315
10	.394
12	.472
15	.591
18	.709
20	.787
22	.866
25	.984
30	1.181
35	1.378
40	1.575
45	1.772
50	1.969
55	2.165
60	2.362
70	2.756
80	3.150
90	3.543
100	3.937

HEX KEYS DIN 911 ON PAGE 19

ft = Fully threaded      pt = Partly threaded

ft	ft	ft	ft			
ft	ft	ft	ft	ft		
ft	ft	ft	ft	ft	ft	
ft	ft	ft	ft	ft	ft	
ft	ft	ft	ft	ft	ft	
ft	ft	ft	ft	ft	ft	ft
	ft	ft	ft	ft	ft	ft
pt	ft	ft	ft	ft	ft	ft
pt	ft	ft	ft	ft	ft	ft
	pt	pt	ft	ft	ft	ft
	pt	pt	pt	pt	pt	ft
	pt	pt	pt	pt	pt	ft
				pt	pt	pt
				pt	pt	pt
					pt	pt
						pt
						pt

HOW TO ORDER : M 6 x 30 DIN 7991

M 10 x 50 DIN 7991





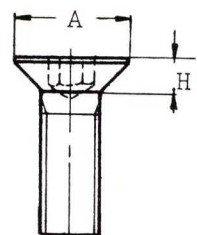
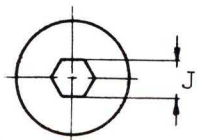
# METRIC

## FLAT HEAD SOCKET CAP SCREWS

**DIN 7991**

MATERIAL : HEAT TREATED ALLOY STEEL

DIA <b>mm</b> INCH	M 14	M 16	M 18	M 20	M 22	M 24
	.551	.630	.709	.787	.866	.945
PITCH mm	2.00	2.00	2.50	2.50	2.50	3.00
THREADS PER INCH	12.5	12.5	10	10	10	8.5
J = SIZE OF HEX KEYS mm	10	10	12	12	14	14
A = HEAD DIAMETER mm	27	30	33	36	36	39
H = HEIGHT OF HEAD mm	7	7.5	8	8.5	13	14



### LENGTH

mm Inches

25	.984
30	1.181
35	1.378
40	1.575
45	1.772
50	1.969
55	2.165
60	2.363
65	2.559
70	2.756
75	2.953
80	3.150
85	3.346
90	3.543
95	3.740
100	3.937

HEX KEYS DIN 911 ON PAGE 19

ft = Fully threaded pt = Partly threaded

ft					
ft	ft	ft			
ft	ft	ft	ft		
ft	ft	ft	ft	ft	
ft	ft	ft	ft	ft	
ft	ft	ft	ft	ft	ft
pt	ft	ft	ft	ft	ft
pt	ft	ft	ft	ft	ft
pt	pt	pt	pt	pt	pt
pt	pt	pt	pt	pt	pt
pt	pt	pt	pt	pt	pt
pt	pt	pt	pt	pt	pt

HOW TO ORDER : M 16 x 90 DIN 7991  
M 24 x 60 DIN 7991

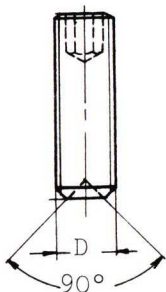
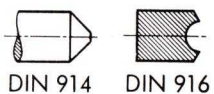
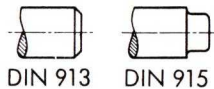
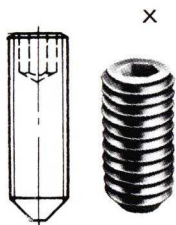
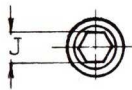


## METRIC

## SOCKET SET SCREWS

**MATERIAL: HEAT TREATED ALLOY STEEL**

<div> <div>DIA</div> <div>mm</div> <div>INCH</div> </div>	M 1.4	M 1.7	M 2	M 2.3	M 2.6	M 3	M 4	M 5
	.055	.067	.079	.091	.102	.118	.158	.197
PITCH mm	0.30	0.35	0.40	0.40	0.45	0.50	0.70	0.80
THREADS PER INCH	85	73	63	63	56	51	36	32
J = SIZE OF HEX KEY mm	0.71	0.71	0.89	0.89	1.27	1.5	2	2.5



LENGTH		HEX KEYS DIN 911 ON PAGE 19						
mm	Inches	HOW TO ORDER: M 2.3 x 10 DIN 914 CONE POINT						
2	.079	o	o					
2.5	.098	o	o	o				
3	.118	o	o	o	o	o		
4	.157	o	o	o	o	o	o	
5	.197	o	o	o	o	o	o	o
6	.236	o	o	o	o	o	o	o
8	.315			o	o	o	o	o
10	.394			o	o	o	o	o
12	.472					o	o	o
15	.591					o	o	o
18	.709						o	o
20	.787						o	o
22	.866						o	o
25	.984						o	o
30	1.181							o

o = STANDARD LENGTH -STOCK SIZE

# FLAT POINT DIN 913

# DOG POINT DIN 915

## CUP POINT DIN 916

## CONE POINT DIN 914

ASSORTMENTS OF SET SCREWS ARE AVAILABLE ON SPECIAL ORDER IN SIZES  
SIMILAR TO THOSE SHOWN ON PAGE 11. Prices on request.





# METRIC DIN 913, 914, 915, 916

## SOCKET SET SCREWS

MATERIAL: HEAT TREATED ALLOY STEEL

DIA	mm	M 6	M 8	M 10	M 12	M 16	M 20	M 24
	INCH	.236	.315	.394	.472	.630	.787	.945
PITCH	mm	1.00	1.25	1.50	1.75	2.00	2.50	3.00
THREADS PER INCH		25	20	17	14.5	12.5	10	8.50
J = SIZE OF HEX KEY	mm	3	4	5	6	8	10	12

### LENGTH

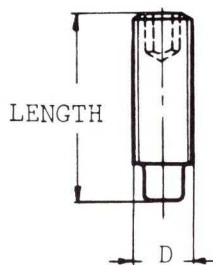
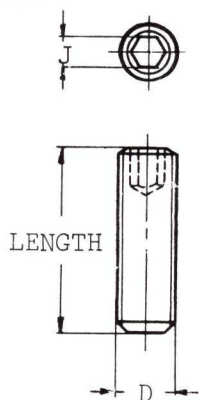
mm Inches

HEX KEYS DIN 911 ON PAGE 19

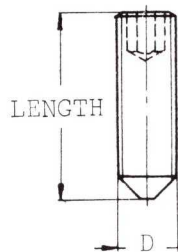
HOW TO ORDER: M 10 x 50 DIN 913 FLAT POINT

6	.236
8	.315
10	.394
12	.472
15	.591
18	.709
20	.787
22	.866
25	.984
30	1.181
35	1.378
40	1.575
45	1.772
50	1.969
55	2.165
60	2.362
70	2.756
75	2.953
80	3.150
90	3.543
100	3.937

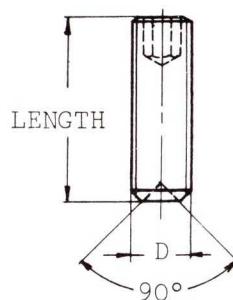
o = STANDARD LENGTH - STOCK SIZE



**DIN 915**  
**DOG**  
**POINT**



**DIN 914**  
**CONE**  
**POINT**



**DIN 916**  
**CUP**  
**POINT**

**FLAT POINT**  
**DIN 913**









# METRIC

## FLAT POINT SLOTTED SET SCREWS

DIN 551

DIA INCH	M	3	3.5	4	5	6	8	10	12
		.118	.138	.157	.197	.236	.315	.394	.472
PITCH	MM	0.50	0.60	0.70	0.80	1.00	1.25	1.50	1.75
THREADS PER INCH		51	42	36	32	25	20	17	14.5



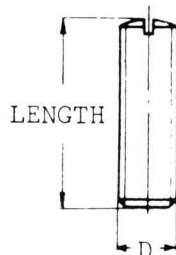
### LENGTH

mm Inches

3	.118
4	.157
5	.197
6	.236
8	.315
10	.394
12	.472
15	.591
18	.709
20	.787
25	.984
30	1.181
35	1.378
40	1.575
45	1.772
50	1.969
55	2.165
60	2.362

How to order: M 6 x 20 DIN 551  
M 10 x 60 DIN 551

STOCK





# ISO THREADS

# METRIC

**DIN 931** THE THREAD LENGTH ON PARTLY THREADED SCREWS

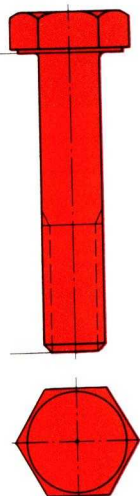
LENGTH		DIA											
UNDER HEAD		M											
mm	Inches	6	7	8	10	12	14	16	18	20	22	24	
30	1.181												
35	1.378												
40	1.575												
45	1.772												
50	1.969												
55	2.165												
60	2.362												
65	2.559												
70	2.756												
75	2.953												
80	3.150												
90	3.543												
100	3.937												
110	4.331												
120	4.724												
130	5.118												
140	5.512												
150	5.906												
160	6.299												
180	7.087												
200	7.874												
220	8.661												
240	9.449												
260	10.236												
280	11.024												
300	11.811												

AVAILABLE  
ON SPECIAL ORDER

PARTLY THREADED

PARTLY THREADED

FULLY THREADED



STAINLESS STEEL  
HEXAGON HEAD CAP SCREWS  
are in stock. Prices on request.



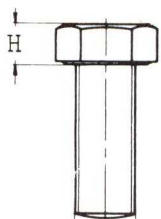
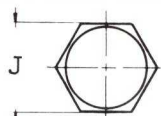


# HEXAGON HEAD CAP SCREWS **METRIC**

MATERIAL: HEAT TREATED ALLOY STEEL

**DIN 933 & 931**

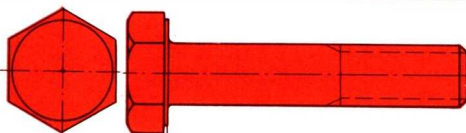
DIA	M	2.6	3	3.5	4	5	6	7	8	10
		INCH								
		.102	.118	.138	.157	.197	.236	.276	.315	.394
PITCH	mm	0.45	0.50	0.60	0.70	0.80	1.00	1.00	1.25	1.50
THREADS PER INCH		56	51	42	36	32	25	25	20	17
H = HEIGHT OF HEAD	mm	1.8	2	2.4	2.8	3.5	4	5.5	5.5	7
J = HEAD ACROSS FLAT	mm	5	5.5	6	7	8	10	11	13	17



## LENGTH UNDER HEAD

mm Inches

3	.118
4	.157
5	.197
6	.236
8	.315
10	.394
12	.472
15	.591
18	.709
20	.787
22	.866
25	.984
28	1.102
30	1.181
35	1.378
40	1.575
45	1.772
50	1.969
55	2.165
60	2.362
65	2.559
70	2.756
75	2.953
80	3.150
85	3.346
90	3.543
100	3.937
110	4.331
120	4.724
130	5.118
140	5.512
150	5.906
160	6.299
180	7.087
200	7.874



HOW TO ORDER:

M 4 x 12 DIN 933

M 8 x 100 DIN 931

NOT AVAILABLE

**DIN 933**

FULLY THREADED

PARTLY THREADED

AND

FULLY THREADED

PARTLY THREADED

**DIN 931**



NOT AVAILABLE

STAINLESS STEEL HEXAGON HEAD CAP SCREWS

PRICES ON REQUEST

**8.8** (86)

HEX HEAD CAP SCREWS IN LENGTH OF 14 & 16mm  
ARE AVAILABLE.





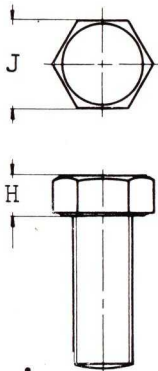
# METRIC

## HEXAGON HEAD CAP SCREWS

DIN 933 & 931

MATERIAL: HEAT TREATED ALLOY STEEL

DIA M	12	14	16	18	20	22	24	27	30
INCH	.472	.551	.630	.709	.787	.866	.945	1.063	1.181
PITCH mm	1.75	2.00	2.00	2.50	2.50	2.50	3.00	3.00	3.50
THREADS PER INCH	14.5	12.5	12.5	10	10	10	8.5	8.5	7-1/3
H = HEIGHT OF HEAD mm	8	9	10	12	13	14	15	17	19
J = HEAD ACROSS FLAT mm	19	22	24	27	30	32	36	41	46



STAINLESS STEEL SCREWS ARE IN STOCK.  
Prices on request.

8.8 (86)

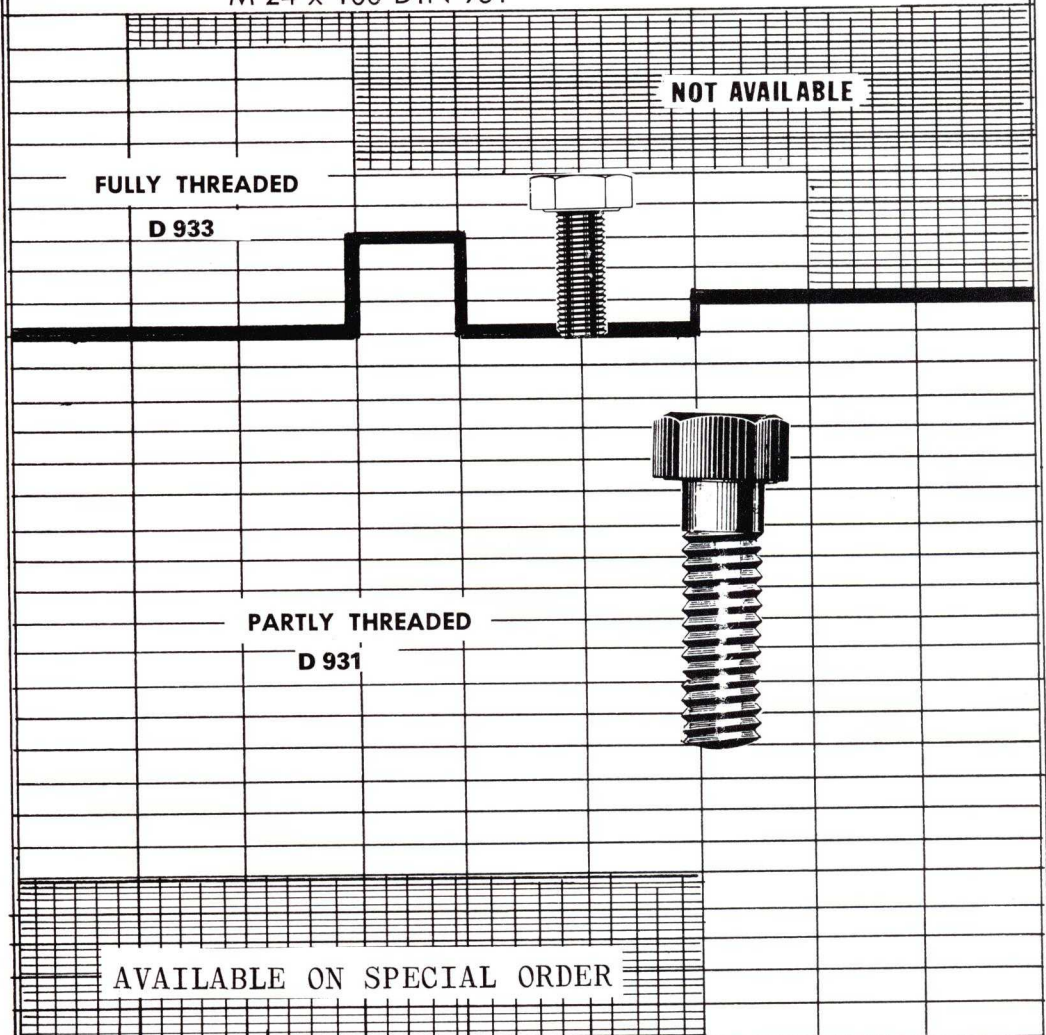
### LENGTH UNDER HEAD

mm	Inches
15	.591
20	.787
22	.866
25	.984
28	1.102
30	1.181
35	1.378
40	1.575
45	1.772
50	1.969
55	2.165
60	2.362
65	2.559
70	2.756
75	2.953
80	3.150
85	3.346
90	3.543
100	3.937
110	4.331
120	4.724
130	5.118
140	5.512
150	5.906
160	6.299
180	7.087
200	7.874
220	8.661
240	9.449
260	10.236
280	11.024
300	11.811

How to order: M 12 x 45 DIN 933

M 12 x 45 DIN 931

M 24 x 100 DIN 931



AVAILABLE ON SPECIAL ORDER

M 12 x 35 , M 12 x 40, M 12 x 45, M 12 x 50, M 14 x 35 , M 14 x 40, M 14 x 45,  
M 14 x 50 , M 16 x 50 are available in full thread and also in partial thread.

FINE THREADS ARE AVAILABLE IN M 10 , M 12 and M 14. PRICES ON REQUEST



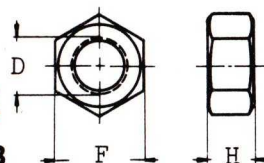



# METRIC HEXAGON NUTS

STANDARD THREAD

**DIN 934**


**MATERIAL** Steel — Nickel Plated | Brass — Nickel Plated | Stainless Steel — Type 18-8



 INCH	M 1	M 1.2	M 1.4	M 1.6	M 1.7	M 2	M 2.3	M 2.6	M 3
	.039	.047	.055	.063	.067	.079	.091	.102	.118
PITCH mm	0.25	0.25	0.30	0.35	0.35	0.40	0.40	0.45	0.50
THREADS PER INCH	102	102	85	73	73	63	63	56	51
F = ACROSS FLAT mm	2.5	3	3	3.5	3.5	4	4.5	5	5.5
H = HEIGHT mm	0.8	1	1.2	1.3	1.4	1.6	1.8	2	2.4
WEIGHT per 1000 Lbs	.074	.12	.14	.18	.21	.31	.44	.60	.85


HOW TO ORDER: M 3 DIN 934 Brass N.P. M 10 DIN 934 Steel Blk.

**MATERIAL** Steel — Nickel Plated | Steel — Black | Brass — Nickel Plated | Stainless Steel — Type 18-8

 INCH	M 3.5	M 4	M 5	M 6	M 7	M 8	M 10	M 12
	.138	.157	.197	.236	.276	.315	.394	.472
PITCH mm	0.60	0.70	0.80	1.00	1.00	1.25	1.50	1.75
THREADS PER INCH	42	36	32	25	25	20	17	14.5
F = ACROSS FLAT mm	6	7	8	10	11	13	17	19
H = HEIGHT mm	2.8	3.2	4	5	5.5	6.5	8	9.5
WEIGHT per 1000 Lbs	1.13	1.79	3.73	5.50	6.88	14	25.5	36

M 3.5 and M 4 are not available in Steel Black, M 8 and M 10 are in stock with 1.00 mm Pitch, M 12 is available with two other pitches: 1.50 mm and 1.00 mm - FINE THREADS.

**MATERIAL** Steel — Black | Brass — Nickel Plated | Stainless Steel — Type 18-8

 INCH	M 14	M 16	M 18	M 20	M 22	M 24	M 27
	.551	.630	.709	.787	.868	.945	1.063
PITCH mm	2.00	2.00	2.50	2.50	2.50	3.00	3.00
THREADS PER INCH	12.5	12.5	10	10	10	8.5	8.5
F = ACROSS FLAT mm	22	24	27	30	32	36	41
H = HEIGHT mm	11	13	15	16	17	18	20
WEIGHT per 100 Lbs	5.5	7.3	11	14	16.5	23	33

The following FINE THREAD Nuts are in stock: M 14 (1.50), M 16 (1.50), M 18 (2.00), M 18 (x1.50), M 20 (1.50), M 20 (2.00), M 22 (2.00), M 22 (1.50), M 24 (2.00), M 24 (1.50), M 27 (2.00), M 27 (1.50).

**8G**



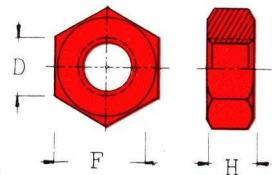
# METRIC HEXAGON NUTS


**DIN 934**

MATERIAL: STEEL-BLACK

BRASS-NICKEL PLATED

STAINLESS STEEL




 D INCH	M 30	M 33	M 36	M 39	M 42	M 45
	1.181	1.299	1.417	1.535	1.653	1.772
PITCH mm	3.50	3.50	4.00	4.00	4.50	4.50
THREADS PER INCH	7-1/3	7-1/3	6-1/4	6-1/4	5.5	5.5
F = ACROSS FLAT mm	46	50	55	60	65	70
H = HEIGHT mm	22	25	28	30	32	35
WEIGHT per 10 pcs	4.5	6.1	9	11	14	17

How to order : M 36 DIN 934 STEEL BLACK

M 52 DIN 934 STEEL BLACK

MATERIAL: STEEL BLACK

 D INCH	M 48	M 52	M 56	M 60	M 64
	1.890	2.047	2.205	2.362	2.520
PITCH mm	5.00	5.00	5.50	5.50	6.00
THREADS PER INCH	5	5	4.5	4.5	4
F = ACROSS FLAT mm	75	80	85	90	95
H = HEIGHT mm	38	40	44	48	50
WEIGHT in Lbs PER 10 pcs	22	26	31	38	43

M 30 and M 33 are in stock with the following other pitches: 2.00 and 1.50 - FINE THREADS.

M 36 , M 39 , M 42 and M 45 are available with the following FINE THREADS: 3.00 and 1.50 mm


## HEXAGON JAM NUTS

STANDARD THREADS

MATERIAL : STEEL NICKEL PLATED

**DIN 439**



 D INCH	M 2	M 2.3	M 2.6	M 3	M 3.5	M 4	M 5	M 6	M 7
	.079	.091	.102	.118	.138	.157	.197	.236	.276
PITCH mm	0.40	0.40	0.45	0.50	0.60	0.70	0.80	1.00	1.00
THREADS PER INCH	63	63	56	51	42	36	32	25	25
F = ACROSS FLAT mm	4	4.5	5	5.5	6	7	8	10	11
H = HEIGHT mm	1.2	1.2	1.6	1.6	2	2	2.5	3	3.5

How to order : M 4 DIN 439 JAM NUTS Steel Nickel Plated

**8G**



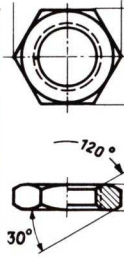


# METRIC HEXAGON JAM NUTS

DIN 936

MATERIAL: STEEL — BLACK

SIZE	PITCH	THREAD	WEIGHT IN Lbs 100 Pcs
mm			
M 8	1.25	Standard	1.10
M 8	1	Fine	1.10
M 10	1.50	Standard	1.89
M 10	1	Fine	1.89
M 12	1.75	Standard	2.60
M 12	1.50	Fine	2.60
M 14	2	Standard	3.9
M 14	1.50	Fine	3.9
M 16	2	Standard	4.4
M 16	1.50	Fine	4.4
M 18	2.50	Standard	6.3
M 18	2	Fine	6.3
M 18	1.50	Fine	6.3
M 20	2.50	Standard	7.7
M 20	2	Fine	7.7
M 20	1.50	Fine	7.7
M 22	2.50	Standard	9.2
M 22	2	Fine	9.2
M 22	1.50	Fine	9.2



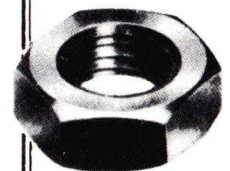
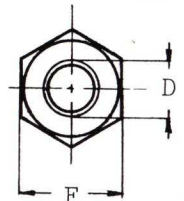
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SIZE	PITCH	THREAD	WEIGHT IN Lbs 100 Pcs
mm			
M 24	3	Standard	12.2
M 24	2	Fine	12.2
M 24	1.50	Fine	12.2
M 26	1.50	Fine	19.8
M 27	2	Fine	19
M 27	1.50	Fine	19
M 28	1.50	Fine	18.2
M 30	3.50	Standard	24
M 30	2	Fine	24
M 30	1.50	Fine	24
M 32	1.50	Fine	33.6
M 33	2	Fine	32.6
M 33	1.50	Fine	32.6
M 35	1.50	Fine	41
M 36	3	Fine	40
M 36	1.50	Fine	40
M 38	1.50	Fine	56
M 39	3	Fine	54
M 39	1.50	Fine	54
M 40	1.50	Fine	53
M 42	3	Fine	64
M 42	1.50	Fine	64

## MEASUREMENTS

SIZE	M 8	M 8	M 10	M 12	M 14	M 16	M 18	M 20	M 22	M 24	M 26
D	mm	8	8	10	12	14	16	18	20	22	26
	Inches	.315	.315	.394	.472	.551	.629	.709	.787	.866	1.024
H	mm	5	5	6	7	8	8	9	9	10	12
	Inches	.197	.197	.236	.276	.315	.315	.354	.354	.394	.472
F	mm	13	14	17	19	22	24	27	30	32	41
	Inches	.512	.551	.669	.748	.866	.945	1.063	1.181	1.260	1.614

SIZE	M 27	M 28	M 30	M 32	M 33	M 35	M 36	M 38	M 39	M 40	M 42
D	mm	27	28	30	32	33	35	36	38	39	42
	Inches	1.063	1.102	1.181	1.260	1.299	1.378	1.417	1.496	1.535	1.654
H	mm	12	12	12	14	14	14	14	16	16	16
	Inches	.472	.472	.472	.551	.551	.551	.551	.630	.630	.630
F	mm	41	41	46	50	50	55	55	60	60	65
	Inches	1.614	1.614	1.811	1.969	1.969	2.165	2.165	2.362	2.362	2.559





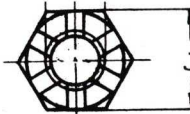
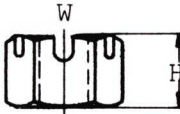
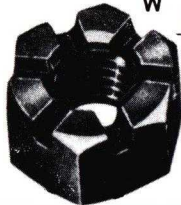
# METRIC

## SLOTTED HEXAGON NUTS

**DIN 935**

**MATERIAL: STEEL — BLACK**

SIZE	PITCH	MEASUREMENTS										THREAD	
				NEW STANDARD SINCE 1966	OLD STANDARD NO LONGER AVAILABLE			NEW STANDARD SINCE 1966	OLD STANDARD NO LONGER AVAILABLE				
mm		SIZE	mm	M 4	M 5	M 5	M 6	M 7	M 8	M 8	M 10	PITCH	APPROX. THREADS PER INCH
M 4	0.70	Inch		.157	.197	.197	.236	.276	.315	.315	.394	mm	
M 5	0.80	mm	5		6	5.5	7.5	7.5	9.5	9.5	12		36
M 6	1.00	Inch	.197		.236	.217	.295	.295	.374	.374	.472		32
M 7	1.00	mm	7		8	9	10	11	13	14	17		25
M 8	1.25	Inch	.276		.315	.354	.394	.433	.512	.551	.669		20
M 8	1.00	mm	1.2		1.4	1.2	2	2	2.5	2.5	2.5		17
M 10	1.50	Inch	.047		.055	.047	.079	.079	.098	.098	.098		14½
M 10	1.00												12½
													10
													8½
													7½
													6¼
													5½



## CASTELLATED HEXAGON NUTS

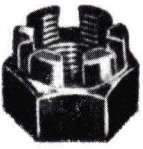
**MATERIAL: STEEL**

SIZE	PITCH	SIZE	PITCH	SIZE	PITCH	SIZE	PITCH	SIZE	PITCH
mm		mm		mm		mm		mm	
M 12	1.75	M 20	2.50	M 26	1.50	M 33	3.50	M 38	1.50
M 12	1.50	M 20	2.00	M 27	3.00	M 33	2.00	M 39	4.00
M 14	2.00	M 20	1.50	M 27	2.00	M 33	1.50	M 39	3.00
M 14	1.50	M 22	2.50	M 27	1.50	M 35	1.50	M 39	1.50
M 16	2.00	M 22	2.00	M 28	1.50	M 36	4.00	M 40	1.50
M 16	1.50	M 22	1.50	M 30	3.50	M 36	3.00	M 42	4.50
M 18	2.50	M 24	3.00	M 30	2.00	M 36	1.50	M 42	3.00
M 18	2.00	M 24	2.00	M 30	1.50			M 42	1.50
M 18	1.50	M 24	1.50	M 32	1.50				

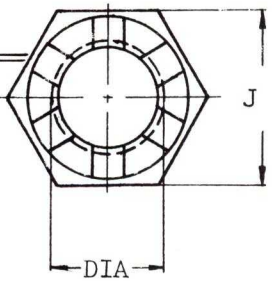
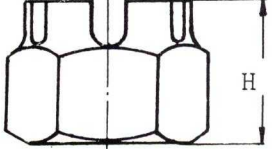
**MEASUREMENTS**

SIZE	mm	M 12	M 14	M 16	M 18	M 20	M 22	M 24	M 26	M 27	M 28
Inch		.472	.551	.630	.709	.787	.866	.945	1.024	1.063	1.102
H	mm	14	16	19	21	22	25	26	28	28	28
Inch		.551	.630	.748	.827	.866	.984	1.024	1.102	1.102	1.102
J	mm	19	22	24	27	30	32	36	41	41	41
Inch		.748	.866	.945	1.063	1.181	1.260	1.417	1.614	1.614	1.614

SIZE	mm	M 30	M 32	M 33	M 35	M 36	M 38	M 39	M 40	M 42
Inch		1.181	1.260	1.299	1.378	1.417	1.496	1.535	1.575	1.654
H	mm	31	34	34	37	37	40	40	40	44
Inch		1.221	1.339	1.339	1.457	1.457	1.575	1.575	1.575	1.732
J	mm	46	50	50	55	55	60	60	60	65
Inch		1.811	1.969	1.969	2.165	2.165	2.362	2.362	2.362	2.559



**DIN 935**



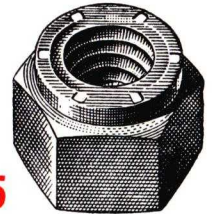


# METRIC STOP NUTS WITH NYLON LOCK RING

MATERIAL: STEEL—CADMIUM PLATED

For Temperatures  
from minus 100°F  
to plus 400°F

**DIN 985**

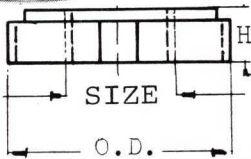
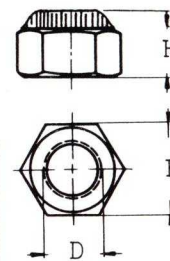


SIZE	PITCH	SIZE	PITCH	SIZE	PITCH	SIZE	PITCH	SIZE	PITCH	SIZE	PITCH
mm		mm		mm		mm		mm		mm	
M 2.6	0.45	M 6	1	M 12	1.75	M 20	2.50	M 30	3.50	M 42	4.50
M 3	0.50	M 7	1	M 14	2	M 22	2.50	M 33	3.50	M 45	4.50
M 4	0.70	M 8	1.25	M 16	2	M 24	3	M 36	4	M 48	5
M 5	0.80	M 10	1.50	M 18	2.50	M 27	3	M 39	4	Nylon Lock Ring	

SIZE	M 2.6	M 3	M 4	M 5	M 6	M 7	M 8	M 10	M 12	M 14	M 16
H mm	3.35	4	5	5	6	7	8	10	12	14	16
H Inches	.132	.157	.197	.197	.236	.276	.315	.394	.472	.551	.630
F mm	5	5.5	7	8	10	11	13	17	19	22	24
F Inches	.197	.216	.276	.315	.394	.433	.512	.669	.748	.866	.945

SIZE	M 18	M 20	M 22	M 24	M 27	M 30	M 33	M 36	M 39	M 42	M 45	M 48
H mm	18	20	22	24	27	30	33	36	39	42	45	48
H Inches	.709	.787	.868	.945	1.063	1.181	1.299	1.417	1.535	1.653	1.772	1.890
F mm	27	30	32	36	41	46	50	55	60	65	70	75
F Inches	1.063	1.181	1.260	1.417	1.614	1.811	1.968	2.165	2.362	2.559	2.756	2.953



## LOCKNUTS

MATERIAL: STEEL

SIZE	PITCH	SIZE	PITCH	SIZE	PITCH	SIZE	PITCH
mm		mm		mm		mm	
M 6	0.50	M 20	1.50	M 35	1.50	M 52	1.50
M 8	1.00	M 22	1.50	M 38	1.50	M 55	1.50
M 10	1.00	M 24	1.50	M 40	1.50	M 58	1.50
M 12	1.50	M 26	1.50	M 42	1.50	M 60	1.50
M 14	1.50	M 28	1.50	M 45	1.50	PITCH mm THREADS PER INCH	
M 16	1.50	M 30	1.50	M 48	1.50		
M 18	1.50	M 32	1.50	M 50	1.50		
						0.50	51
						1.00	25
						1.50	17

SIZE	mm	M 6	M 8	M 10	M 12	M 14	M 16	M 18	M 20	M 22	M 24	M 26	M 28	M 30
Inch		.236	.315	.394	.472	.551	.630	.709	.787	.866	.945	1.024	1.102	1.181
O.D.	mm	16	20	25	28	30	32	34	36	40	42	45	50	50
Inch		.630	.787	.984	1.102	1.181	1.260	1.339	1.417	1.575	1.654	1.772	1.969	1.969
H	mm	5	5	6	6	7	7	8	8	9	9	10	10	10
Inch		.197	.197	.236	.236	.276	.276	.315	.315	.354	.354	.394	.394	.394

SIZE	mm	M 32	M 35	M 38	M 40	M 42	M 45	M 48	M 50	M 52	M 55	M 58	M 60
Inch		1.260	1.378	1.496	1.575	1.654	1.772	1.890	1.969	2.047	2.165	2.284	2.362
O.D.	mm	52	55	58	60	60	68	75	75	80	80	90	90
Inch		2.047	2.165	2.284	2.362	2.362	2.677	2.756	2.756	3.150	3.150	3.543	3.543
H	mm	11	11	11	12	12	12	13	13	13	13	13	13
Inch		.433	.433	.433	.472	.472	.472	.512	.512	.512	.512	.512	.512



# METRIC WING NUTS

MATERIAL: STEEL

DIN 315



SIZE	PITCH	SIZE	PITCH	SIZE	PITCH	SIZE	PITCH
mm		mm		mm		mm	
M 3	0.50	M 6	1.00	M 10	1.50	M 16	2.00
M 4	0.70	M 8	1.25	M 12	1.75	M 20	2.50
M 5	0.80					M 24	3.00



# METRIC THREADED RODS

STANDARD THREAD

MATERIAL: STEEL

SIZE		PITCH
mm	Inches	mm
M 2	.079	0.40
M 2.3	.091	0.40
M 2.6	.102	0.45
M 3	.118	0.50
M 4	.157	0.70
M 5	.197	0.80
M 6	.236	1.00

SIZE		PITCH
mm	Inches	mm
M 8	.315	1.25
M 10	.394	1.50
M 12	.472	1.75
M 14	.551	2.00
M 16	.630	2.00
M 18	.709	2.50
M 20	.787	2.50

SIZE		PITCH
mm	Inches	mm
M 22	.866	2.50
M 24	.945	3.00
M 27	1.063	3.00
M 30	1.181	3.50
M 33	1.299	3.50
M 36	1.417	4.00
M 39	1.535	4.00

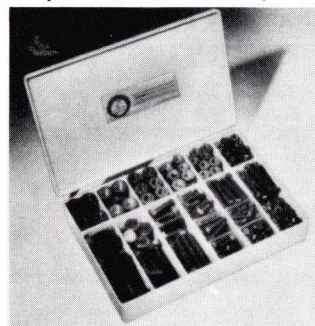
IN 1 METER LENGTHS (Approximately 3 Feet)

## HEXAGON HEAD BOLTS and NUTS SET NO. 160

160 PIECES

(In Plastic Boxes)

CAT.  
No. 160



BOLTS Standard Thread	Pcs.	NUTS Standard Thread	Pcs.
5 x 20mm	9	5mm	26
5 x 40mm	8	6mm	21
6 x 25mm	6	8mm	12
6 x 40mm	6	10mm	11
8 x 25mm	6	12mm	5
8 x 50mm	5	Fine Thread	
10 x 30mm	3	8 x 1mm	16
10 x 50mm	6	10 x 1mm	7
12 x 50mm	3	12 x 1.5mm	5
—	—	12 x 1mm	5





# METRIC

## FLAT WASHERS

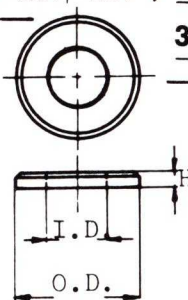


**DIN 125**

FOR SCREW SIZE		FOR SCREW SIZE		FOR SCREW SIZE		MEASUREMENTS			
mm	Inches	mm	Inches	mm	Inches	Screw DIA	I.D.	O.D.	H
1.7	.067	5	.197	16	.630	1.7 mm Inch	1.8 .071	4.5 .177	.3 .012
2	.079	6	.236	18	.709	2 mm Inch	2.2 .087	5.5 .217	.5 .020
2.3	.091	7	.276	20	.787	2.3 mm Inch	2.5 .098	6 .236	.5 .020
2.6	.102	8	.315	22	.868	2.6 mm Inch	2.8 .110	7 .276	.5 .020
3	.118	10	.394	24	.945	3 mm Inch	3.2 .126	7 .276	.5 .020
3.5	.138	12	.472	27	1.063	3.5 mm Inch	3.7 .146	8 .315	.5 .020
4	.158	14	.551	30	1.181	4 mm Inch	4.3 .169	9 .354	.8 .032
						5 mm Inch	5.3 .209	11 .433	1 .039
						6 mm Inch	6.4 .252	12 .472	1.5 .059
						7 mm Inch	7.4 .291	14 .551	1.5 .059
						8 mm Inch	8.4 .331	17 .669	2 .079
						10 mm Inch	10.5 .413	21 .827	2.5 .098
						12 mm Inch	13 .512	24 .945	3 .118
						14 mm Inch	15 .591	28 1.102	3 .118
						16 mm Inch	17 .669	30 1.181	3 .118
						18 mm Inch	19 .748	34 1.339	4 .157
						20 mm Inch	21 .827	36 1.417	4 .157
						22 mm Inch	23 .906	40 1.575	4 .157
						24 mm Inch	25 .984	44 1.732	4 .157
						27 mm Inch	28 1.102	50 1.969	5 .197
						30 mm Inch	31 1.221	56 2.205	5 .197

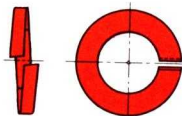
**MATERIAL: STEEL—NICKEL PLATED**  
**BRASS—NICKEL PLATED**  
**STAINLESS STEEL—Type 18-8 (303)**

HOW TO ORDER:  
 2 mm FLAT WASHER DIN 125 STEEL NICKEL PLATED  
 6 mm FLAT WASHER DIN 125 BRASS NICKEL PLATED  
 10 mm FLAT WASHER DIN 125 STAINLESS STEEL

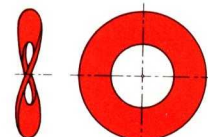




# METRIC LOCK WASHERS



# DIN 137 SPRING WASHERS



FOR SCREW SIZE		DIN 127   DIN 7980						
		Screw DIA	I.D.	O.D.	H	I.D.	O.D.	H
2	.079	2 mm Inch	2.1 .083	3.9 .154	.5 .020	NOT AVAILABLE		
2.3	.091	2.3 mm Inch	2.4 .094	4.4 .173	.6 .024	NOT AVAILABLE		
2.6	.102	2.6 mm Inch	2.7 .106	4.7 .185	.6 .024	NOT AVAILABLE		
3	.118	3 mm Inch	3.1 .122	5.7 .224	.8 .032	3.1 .122	5.6 .220	1 .039
3.5	.138	3.5 mm Inch	3.6 .142	6.2 .244	.8 .032	NOT AVAILABLE		
4	.158	4 mm Inch	4.1 .161	7.1 .280	.9 .035	4.1 .161	7 .276	1.2 .047
5	.197	5 mm Inch	5.1 .201	8.7 .343	1.2 .047	5.1 .201	8.6 .339	1.5 .059
6	.236	6 mm Inch	6.1 .240	11.1 .437	1.6 .063	6.1 .240	9.7 .382	1.5 .059
7	.276	7 mm Inch	7.1 .280	12.1 .476	1.6 .063	NOT AVAILABLE		
8	.315	8 mm Inch	8.2 .323	14.2 .559	2 .079	8.2 .323	12.8 .504	2 .079
10	.394	10 mm Inch	10.2 .402	17.2 .677	2.2 .087	10.2 .402	16.1 .633	2.5 .098
12	.472	12 mm Inch	12.3 .480	20.2 .795	2.5 .098	12.2 .480	18.3 .720	2.5 .098
14	.551	14 mm Inch	14.2 .559	23.2 .913	3 .118	14.2 .559	21.4 .841	3 .118
16	.630	16 mm Inch	16.2 .638	26.2 1.031	3.5 .138	16.2 .638	24.6 .969	3.5 .138
18	.709	18 mm Inch	18.2 .717	28.2 1.110	3.5 .138	18.2 .717	26.6 1.047	3.5 .138
20	.787	20 mm Inch	20.2 .795	32.2 1.268	4 .158	20.2 .795	30.6 1.206	4.5 .177
22	.868	22 mm Inch	22.5 .888	34.5 1.359	4 .158	22.5 .888	32.9 1.296	4.5 .177
24	.945	24 mm Inch	24.5 .965	38.5 1.516	5 .197	24.5 .965	35.9 1.414	5 .197
27	1.063	27 mm Inch	27.5 1.084	41.5 1.635	5 .197	27.5 1.084	38.9 1.533	5 .197
30	1.181	30 mm Inch	30.5 1.202	46.5 1.832	6 .236	30.5 1.202	44.2 1.741	6 .236
		DIN 127 FOR STANDARD SCREWS						
		DIN 7980 FOR SOCKET HEAD CAP SCREWS (DIN 912 AND DIN 6912)						

FOR SCREW SIZE		Screw DIA	I.D.	O.D.	H
1	.039	1 mm Inch	1.1 .043	2.5 .098	.2 .008
1.2	.047	1.2 mm Inch	1.3 .051	3 .118	.2 .008
1.4	.055	1.4 mm Inch	1.5 .059	3 .118	.25 .010
1.7	.067	1.7 mm Inch	1.8 .071	4 .157	.25 .010
2	.079	2 mm Inch	2.2 .087	4.5 .177	.3 .012
2.3	.091	2.3 mm Inch	2.5 .098	5 .197	.3 .012
2.6	.102	2.6 mm Inch	2.8 .110	5.5 .217	.3 .012
3	.118	3 mm Inch	3.2 .126	8 .315	.5 .020
3.5	.138	3.5 mm Inch	3.7 .146	8 .315	.5 .020
4	.158	4 mm Inch	4.3 .169	9 .354	.5 .020
5	.197	5 mm Inch	5.3 .209	11 .433	.5 .020
6	.236	6 mm Inch	6.4 .252	12 .472	.5 .020
7	.276	7 mm Inch	7.4 .291	15 .591	.8 .032
8	.315	8 mm Inch	8.4 .331	15 .591	.8 .032
10	.394	10 mm Inch	10.5 .413	18 .709	1 .039
12	.472	12 mm Inch	13 .512	24 .945	1.2 .047
14	.551	14 mm Inch	15 .591	28 1.102	1.5 .059
16	.630	16 mm Inch	17 .669	30 1.181	1.5 .059
18	.709	18 mm Inch	19 .748	34 1.339	1.5 .059
20	.787	20 mm Inch	21 .827	36 1.417	1.6 .063
22	.868	22 mm Inch	23 .906	40 1.575	1.8 .071
24	.945	24 mm Inch	25 .984	44 1.732	1.8 .071
27	1.063	27 mm Inch	28 1.102	50 1.969	2 .079
30	1.181	30 mm Inch	31 1.221	56 2.205	2.2 .087






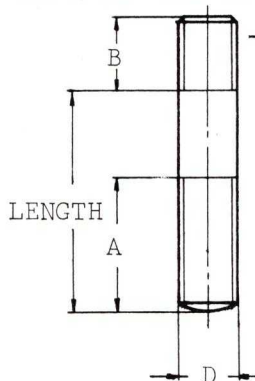
# METRIC STUDS

MATERIAL: STEEL

DIN 939

DIA	M INCH	5	6	8	10	12	14	16	18	20	22	24
		.197	.236	.315	.394	.472	.551	.630	.709	.787	.866	.945
PITCH	mm	0.80	1.00	1.25	1.50	1.75	2.00	2.00	2.50	2.50	2.50	3.00
THREADS PER INCH		32	25	20	17	14.5	12.5	12.5	10	10	10	8.5
 <b>LENGTH</b>		← DIMENSION 'B' IS NOT INCLUDED										
		OVERALL LENGTH mm										
15	.591	21.5	22.5									
20	.787	26.5	27.5	30								
25	.984	31.5	32.5	35	37							
30	1.181	36.5	37.5	40	42	45	48	50				
35	1.378	41.5	42.5	45	47	50	53	55				
40	1.575	46.5	47.5	50	52	55	58	60	62	65	68	70
45	1.772	51.5	52.5	55	57	60	63	65	67	70	73	75
50	1.969	56.5	57.5	60	62	65	68	70	72	75	78	80
55	2.165		62.5	65	67	70	73	75	77	80	83	85
60	2.362		67.5	70	72	75	78	80	82	85	88	90
65	2.559		72.5	75	77	80	83	85	87	90	93	95
70	2.756			80	82	85	88	90	92	95	98	100
75	2.953			85	87	90	93	95	97	100	103	105
80	3.150			90	92	95	98	100	102	105	108	110
85	3.346				97	100	103	105	107	110	113	115
90	3.543				102	105	108	110	112	115	118	120
95	3.740				107	110	113	115	117	120	123	125
100	3.937				112	115	118	120	122	125	128	130
A thread mm		12	15	18	20	22	25	28	30	32	35	38
B thread mm		6.5	7.5	10	12	15	18	20	22	25	28	30
metric sizes		HIGH TENSION STEEL STUDS — PRICES ON REQUEST										

HOW TO ORDER A 20mm DIA x 80mm OVERALL LENGTH STEEL STUD :  
M 20 x 55 DIN 939



## STUD PULLER AND SETTER

Teeth sharp milled  
for "bite" and  
easy release

Finish  
N = nickel plated



No.	for Studs of Dia.	
	mm	inch
8600/1	4,5 — 9,5	3/16 — 3/8
8600/2	8 — 19	5/16 — 3/4
8600/3	18 — 25	5/8 — 1.





# METRIC

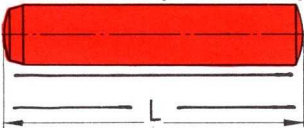
## PRECISION GROUND DOWEL PINS

MATERIAL: TOOL STEEL — HEAT TREATED



DIN 6325

LENGTH		mm			DIA		mm			
mm	Inches	1	1.5	2	2.5	3	4	5	6	7
3	.118									
4	.158									
5	.197									
6	.236									
8	.315									
10	.394									
12	.472									
14	.551									
16	.630									
18	.709									
20	.787									
24	.945									
28	1.102									
32	1.260									
36	1.417									
40	1.575									
45	1.772									
50	1.969									
55	2.165									
60	2.362									
70	2.756									
80	3.150									
90	3.543									
100	3.937									



NOT AVAILABLE

HOW TO ORDER: 2 x 24 mm DIN 6325 DOWEL PINS





# METRIC

## PRECISION GROUND DOWEL PINS

MATERIAL: TOOL STEEL — HEAT TREATED



DIN 6325

LENGTH		mm								
		DIA								
mm	Inches	8	9	10	12	13	14	16	18	20
10	.394									
12	.472									
14	.551									
16	.630									
18	.709									
20	.787									
24	.945									
28	1.102									
32	1.260									
36	1.417									
40	1.575									
45	1.772									
50	1.969									
55	2.165									
60	2.362									
70	2.756									
80	3.150									
90	3.543									
100	3.937									
120	4.724									
130	5.118									
140	5.512									
150	5.906									

NOT AVAILABLE

DIA

LENGTH

NOT AVAILABLE

HOW TO ORDER : M 14 x 28 DIN 6325



# METRIC

## PRECISION GROUND TAPER PINS

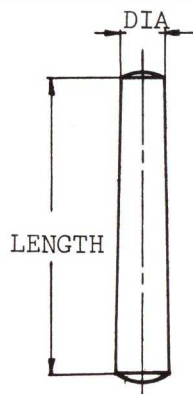
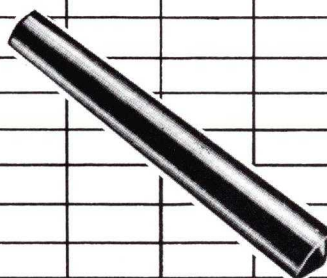
DIN 1

MATERIAL: TOOL STEEL — HEAT TREATED

LENGTH		mm												TAPER 1:50	
mm	Inches	1.5	2	2.5	3	4	5	6	8	10	13	16	20		
10	.394														
12	.472														
14	.551														
16	.630														
18	.709														
20	.787														
22	.866														
24	.945														
26	1.378														
28	1.102														
30	1.181														
32	1.260														
36	1.417														
40	1.575														
45	1.772														
50	1.969														
55	2.165														
60	2.362														
70	2.756														
80	3.150														
90	3.543														
100	3.937														
110	4.331														
120	4.724														
130	5.118														
140	5.512														
150	5.906														

NOT AVAILABLE

NOT AVAILABLE



HOW TO ORDER:

2 x 28 mm DIN 1 TAPER PIN  
 2.5 x 32 mm DIN 1 TAPER PIN  
 10 x 100 mm DIN 1 TAPER PIN







# METRIC MACHINE SCREWS

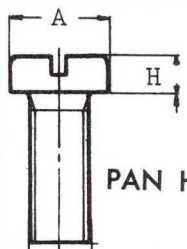
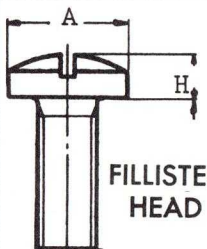
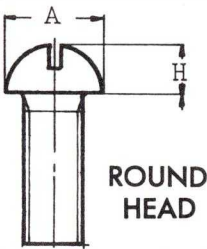
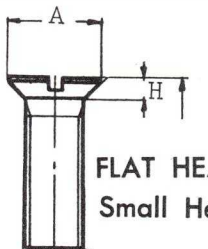
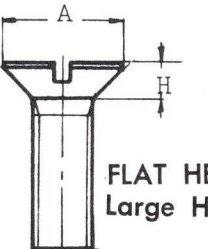
MEASUREMENTS  
in millimeter

DIA	mm	M1	M1.2	M1.4	M1.7	M2	M2.3	M2.6
DIN 84	A	2	2.3	2.6	3.5	4	4.5	5
	H	0.7	0.8	1	1.2	1.3	1.5	1.7
DIN 85	A	2	2.3	2.6	3.5	4	4.5	5
	H	0.9	1	1.2	1.4	1.6	1.8	2
DIN 86	A	2	2.3	2.6	3.5	4	4.5	5
	H	1	1.15	1.3	1.7	2	2.2	2.5
DIN 63	A	2	2.3	2.6	3.5	4	4.5	5
	H	0.6	0.7	0.8	1.1	1.2	1.3	1.4

STEEL-NICKEL PLATED

BRASS-NICKEL PLATED

STAINLESS STEEL 303

DIN 84	DIN 85	DIN 86	DIN 63	DIN 87
				
PAN HEAD	FILLISTER HEAD	ROUND HEAD	FLAT HEAD Small Head	FLAT HEAD Large Head

DIA	mm	M3	M3.5	M4	M5	M6	M8	M10
DIN 84	A	5.5	6	7	9	10	13	16
	H	2	2.4	2.8	3.5	4	5	6
DIN 85	A	6	7	8	10	12	16	20
	H	2.4	2.7	3.1	3.8	4.6	6	7.5
DIN 86	A	5.5	6	7	9	10	13	16
	H	2.7	3	3.5	4.5	5	6	7.5
DIN 63	A	5.5	6	7	9	10	13	NOT AVAILABLE
	H	1.5	1.5	1.8	2.3	2.3	2.8	
DIN 87	A	6	7	8	10	12	16	20
	H	1.7	2	2.3	2.8	3.3	4.4	5.5

All above sizes are in mm.









# METRIC MACHINE SCREWS

STEEL-NICKEL PLATED	BRASS-NICKEL PLATED	STAINLESS STEEL 303
---------------------	---------------------	---------------------

DIA		mm	M 1	M 1.2	M 1.4	M 1.7	M 2	M 2.3	M 2.6
		Inches	.039	.047	.055	.067	.079	.091	.102
Pitch		mm	0.25	0.25	0.30	0.35	0.40	0.40	0.45
THREADS PER INCH			102	102	85	73	63	63	56
X	LENGTH UNDER HEAD		HOW TO ORDER: M 2.3 x 20 DIN 84 PAN HEAD Steel Nickel Plated M 1 x 5 DIN 85 FILLISTER HD. Brass Nickel Plated M 1.7 x 15 DIN 63 FLAT HD.-SMALL HD. Stainless Steel						
	mm	INCH							
	2	.079							NOT AVAILABLE
	3	.118							
	4	.157							
	5	.197							
	6	.236							
	8	.315							
	10	.394							
	12	.472							
	15	.591							
	18	.709							
	20	.787		NOT AVAILABLE					
	22	.866							
25	.984								

LENGTH of DIN 63 Screws includes the head.

 <b>DIN 84</b> <b>PAN HEAD</b>	 <b>DIN 85</b> <b>FILLISTER HEAD</b>	 <b>DIN 86</b> <b>ROUND HEAD</b>	 <b>DIN 63</b> Small Head <b>FLAT HEAD</b>
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TECHNICAL INFORMATION ON PAGE 37.





# METRIC MACHINE SCREWS






STEEL-NICKEL PLATED	BRASS-NICKEL PLATED	STAINLESS STEEL 303
---------------------	---------------------	---------------------

DIA mm Inches	M 3	M 3.5	M 4	M 5	M 6	M 8	M 10
	.118	.138	.157	.197	.236	.315	.394
Pitch mm	0.50	0.60	0.70	0.80	1.00	1.25	1.50
THREADS PER INCH	51	42	36	32	25	20	17

LENGTH UNDER HEAD		HOW TO ORDER: M 3 x 35 DIN 84 PAN HEAD BRASS NICKEL PLATED M 6 x 50 DIN 86 ROUND HEAD STEEL NICKEL PLATED M 5 x 8 DIN 63 FLAT HD. SMALL HD. STAINLESS STEEL					
mm	Inches						
4	.157						
5	.197					NOT AVAILABLE	
6	.236						
8	.315						
10	.394						
12	.472						
15	.591						
18	.709						
20	.787						
22	.866						
25	.984						
28	1.102						
30	1.181						
35	1.378						
40	1.575						
45	1.772						
50	1.969						
55	2.165	NOT AVAILABLE					
60	2.362						

LENGTH of DIN 63 and DIN 87 Screws includes the head.

EXCEPTIONS: DIN 63 M 3 & DIN 87 M 3 Minimum length: 5mm  
DIN 63 M 3.5, M 4, - DIN 87 M 3.5, M 4 Minimum length : 6 mm  
DIN 63 M 5 and DIN 87 M 5 Minimum length : 8 mm

				
<b>DIN 84</b> PAN HEAD	<b>DIN 85</b> FILLISTER HEAD	<b>DIN 86</b> ROUND HEAD	<b>DIN 63</b> FLAT HEAD Small Head	<b>DIN 87</b> FLAT HEAD Large Head





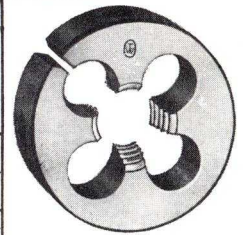
# METRIC HIGH SPEED GROUND THREAD HAND TAPS

# HIGH SPEED ROUND DIES

NOMINAL DIA mm		PITCH mm	OVERALL LENGTH mm	THREAD LENGTH mm	FLUTES	RECOM- MENDED DRILL mm	Height mm	O.D. Inches
SIZES MARKED WITH * ARE 2 PCS SETS.	M 1	0.25	28	8	3	0.75	5	13/16
	1	0.20	28	8	3	0.80	5	13/16
	1.2	0.25	28	8	3	0.95	5	13/16
	1.2	0.20	28	8	3	1.00	5	13/16
	1.4	0.30	31	10	3	1.10	5	13/16
	1.4	0.20	31	10	3	1.20	5	13/16
	1.5	0.30	31	10	3	1.20	5	13/16
	1.6	0.35	35	10	3	1.25	5	13/16
	1.7	0.35	35	10	3	1.30	5	13/16
	1.7 *	0.20	35	10	3	1.50	5	13/16
	1.8	0.35	35	10	3	1.45	5	13/16
	2	0.40	39	11	3	1.60	5	1
	2 *	0.25	39	11	3	1.75	5	1
	2.2	0.45	39	11	3	1.75	5	1
	2.3	0.40	39	11	3	1.90	5	1
	2.3 *	0.25	39	11	3	2.05	5	1
	2.5	0.45	43	12	3	2.05	5	1
	2.6	0.45	43	12	3	2.15	5	1
	2.6 *	0.35	43	12	3	2.25	5	1
	3	0.60	52	19	3	2.40	5	1
	3	0.50	52	19	3	2.50	5	1
	3 *	0.35	52	19	3	2.65	5	1
	3.5	0.60	55	20	3	2.90	5	1
	3.5 *	0.35	55	20	3	3.15	5	1
	4	0.75	57	22	3	3.25	5	1
	4	0.70	57	22	3	3.30	5	1
	4 *	0.50	57	22	3	3.50	5	1

SIZES MARKED WITH \*  
ARE 2 PCS SETS.

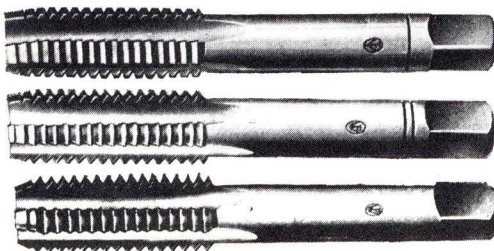
COARSE THREADS ARE PRINTED **IN RED**



HOW TO ORDER : M 4 x 0.70 HS DIE

TO CUT A NEW THREAD WE RECOMMEND USING 3 Pc SET . -Single Taps: **PLUG** or **BOTTOMING** are available.

3 Pc SET



TAPER

PLUG

BOTTOMING

LEFT HAND TAPS  
AND DIES

- PRICES ON REQUEST





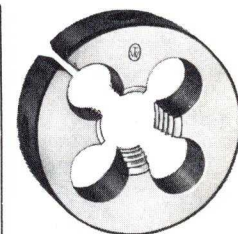
# **HIGH SPEED** **GROUND THREAD** **HAND TAPS** SETS OF 3 PCS

# **METRIC** **HIGH SPEED** **ROUND DIES**

NOMINAL DIA mm	PITCH mm	OVERALL LENGTH mm	THREAD LENGTH mm	FLUTES	RECOM- MENDED DRILL mm	Height mm	O.D. Inches
<b>M</b> 4.5	<b>0.75</b>	54	22	3	3.75	6	1
4.5 *	0.50	54	18		4.00		1
5	0.90	56	24	3	4.10	6	1
5	<b>0.80</b>	56	24		4.20		1
5	0.75	56	20		4.25		1
5 *	0.50	56	20		4.50		1
5.5	<b>0.90</b>	58	24	3	4.60	6	1
6	<b>1.00</b>	60	20	4	5.00	6	1
6	0.75	60	20		5.25		1
6 *	0.50	60	20		5.50		1
7	<b>1.00</b>	62	26	4	6.00	7	1
7	0.75	62	20		6.25		1
7 *	0.50	62	20		6.50		1
8	<b>1.25</b>	66	26		6.75	8	1
8	1.00	66	26	4	7.00		1
8	0.75	66	20				1
9	<b>1.25</b>	68	26	4	7.75	8	1
9	1.00	68	26		8.00		1
9	0.75	68	20		8.25		1
10	<b>1.50</b>	72	30	4	8.50	11	1
10	1.25	72	26		8.75		1
10	1.00	72	26		9.00		1
10	0.75	72	26		9.25		1
11	<b>1.50</b>	74	30	4	9.50	11	1
11	1.25	74	26		9.75		1
11	1.00	74	26		10.00		1
11	0.75	74	26		10.25		1
12	<b>1.75</b>	80	30	4	10.25	11	1½
12	1.50	80	30		10.50		1½
12	1.25	80	26		10.75		1½
12	1.00	80	26		11.00		1½

SIZES MARKED WITH \*  
ARE 2 PCS SETS.

COARSE THREADS ARE PRINTED **IN RED**



PITCH	THREAT per inc
0.20	126
0.25	102
0.30	85
0.35	73
0.40	63
0.45	56
0.50	51
0.60	42
0.70	36
0.75	34
0.80	32
0.90	29
1.00	25
1.25	20
1.50	17
1.75	14½

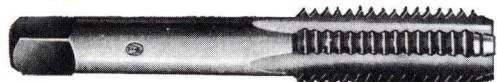
3 Pc SET



TAPER



PLUG



BOTTOMING

Single Taps: **PLUG** or  
**BOTTOMING** are available.



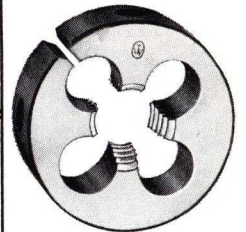


# METRIC HIGH SPEED GROUND THREAD HAND TAPS

SETS OF 3 PCS (TAPER — PLUG — BOTTOMING)

HIGH SPEED  
ROUND DIES

NOMINAL DIA mm	PITCH mm	OVERALL LENGTH mm	THREAD LENGTH mm	FLUTES	RECOM- MENDED DRILLmm	Height mm	O.D. Inches
<b>M</b>	<b>14</b>	<b>2.00</b>	86	35	12	10	1½
	<b>14</b>	1.50	86	35	12.5		1½
	<b>14</b>	1.25	86	26	12.75		1½
	<b>14</b>	1.00	86	26	13		1½
	<b>16</b>	<b>2.00</b>	90	35	14	14	1½
	<b>16</b>	1.50	90	35	14.5		1½
	<b>16</b>	1.25	90	26	14.75		1½
	<b>16</b>	1.00	90	26	15		1½
	<b>18</b>	<b>2.50</b>	100	42	15.5	14	1½
	<b>18</b>	2.00	100	35	16		1½
	<b>18</b>	1.50	100	35	16.5		1½
	<b>18</b>	1.00	100	35	17		1½
	<b>20</b>	<b>2.50</b>	106	45	17.5	14	1½
	<b>20</b>	2.00	106	40	18		1½
	<b>20</b>	1.50	106	35	18.5		1½
	<b>20</b>	1.25	106	30	18.75		1½
	<b>20</b>	1.00	106	30	19		1½
	<b>22</b>	<b>2.50</b>	112	45	19.5	16	1¾
	<b>22</b>	2.00	112	40	20		1¾
	<b>22</b>	1.50	112	35	20.5		1¾
	<b>22</b>	1.00	112	30	21		1¾
	<b>24</b>	<b>3.00</b>	122	45	21	16	1¾
	<b>24</b>	2.00	122	40	22		1¾
	<b>24</b>	1.50	122	35	22.5		1¾
	<b>25</b>	2.00	122	40	23	16	2
	<b>25</b>	1.50	122	35	23.5		2
	<b>25</b>	1.00	122	30	24		2
	<b>26</b>	1.50	122	35	24.5	18	2
	<b>27</b>	<b>3.00</b>	128	45	24	18	2
	<b>27</b>	2.00	128	40	25		2
	<b>27</b>	1.50	128	35	25.5		2
	<b>27</b>	1.00	128	30	26		2
	<b>28</b>	2.00	128	40	26	18	2
	<b>28</b>	1.50	128	35	26.5		2
	<b>28</b>	1.00	128	30	27		2



PITCH	THREAD per inch
1.00	25
1.25	20
1.50	17
1.75	14½
2.00	12½
2.50	10
3.00	8½
3.50	7½
4.00	6¼
4.50	5½
5.00	5
6.00	4¼

COARSE THREADS ARE PRINTED IN RED

SUPER HIGH SPEED STEEL

HOW TO ORDER : M 20 x 2.50 HSGT TAP SET



TAPER

PLUG AND BOTTOMING

SINGLE TAPS ARE AVAILABLE

TO CUT A NEW THREAD WE RECOMMEND USING 3 PC SET





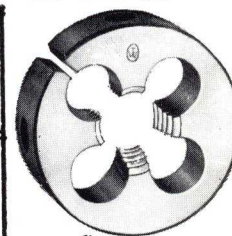
# **HIGH SPEED GROUND THREAD HAND TAPS**

# **METRIC**

# **HIGH SPEED ROUND DIES**

NOMINAL DIA mm	PITCH mm	OVERALL LENGTH mm	THREAD LENGTH mm	FLUTES	RECOM- MENDED DRILL mm	Height mm	O.D. Inches
<b>M</b>	<b>30</b>	<b>3.50</b>	138	50			2
	<b>30</b>	2.00	138	40			2
	<b>30</b>	1.50	138	40	4	18	2
	<b>30</b>	1.00	138	35			2
	<b>32</b>	1.50	138	40	4	18	2½
	<b>33</b>	<b>3.50</b>	144	50			2½
	<b>33</b>	2.00	144	40	4	18	2½
	<b>33</b>	1.50	144	40			2½
	<b>34</b>	1.50	144	40	4	18	2½
	<b>35</b>	1.50	144	40	4	18	2½
	<b>36</b>	<b>4.00</b>	154	60			2½
	<b>36</b>	3.00	154	45	4	18	2½
	<b>36</b>	1.50	154	40			2½
	<b>38</b>	1.50	154	40	4	20	3
	<b>39</b>	<b>4.00</b>	160	60			3
	<b>39</b>	3.00	160	45	4	20	3
	<b>39</b>	1.50	160	40			3
	<b>40</b>	1.50	160	40	4	20	3
	<b>42</b>	<b>4.50</b>	168	65			3
	<b>42</b>	3.00	168	45	4	20	3
	<b>42</b>	1.50	168	40			3
	<b>45</b>	4.50	175	65			3
	<b>45</b>	3.00	175	50	4	22	3
	<b>45</b>	1.50	175	45			3
	<b>48</b>	<b>5.00</b>	182	70			3
	<b>48</b>	3.00	182	50	4	22	3
	<b>48</b>	1.50	182	45			3
	<b>50</b>	1.50	182	45	4	22	3
	<b>52</b>	<b>5.00</b>	188	70			3
	<b>52</b>	3.00	188	50	4	22	3
	<b>52</b>	1.50	188	45			3

STANDARD (COARSE) THREAD MOST COMMONLY USED, MARKED IN RED

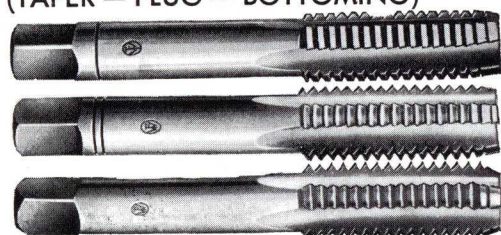


HOW TO ORDER: M 39 x 4.00 HS Die

## **THREAD**

PITCH mm	APPROX. THREADS PER INCH
0.40	63
0.45	56
0.50	51
0.60	42
0.70	36
0.80	32
1	25
1.25	20
1.50	17
1.75	14½
2	12½
2.50	10
3	8½
3.50	7¼
4	6¼
4.50	5½
5	5

TO CUT A NEW THREAD WE RECOMMEND USING 3 Pc SET  
(TAPER — PLUG — BOTTOMING)



Single Taps : **PLUG AND BOTTOMING**  
are available.

HOW TO ORDER: M 30 x 3.50 HSGT TAP SET  
M 36 x 4.00 HSGT PLUG TAP

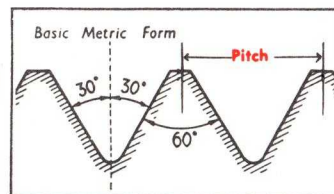




**SUPER HIGH SPEED STEEL**

# METRIC HIGH SPEED STEEL GROUND THREAD TAP AND DIE SETS IN WOODEN BOXES

**THREE TAPS (TAPER, PLUG AND BOTTOMING) FROM EACH SIZE ARE INCLUDED**



T A P S			D I E S			
3 Pc SET	SIZE mm	PITCH mm	EACH	SIZE mm	PITCH mm	O.D. Inch
1	M 5	0.80	1	M 5	0.80	1
1	M 6	1.00	1	M 6	1.00	1
1	M 8	1.25	1	M 8	1.25	1
1	M 10	1.50	1	M 10	1.50	1
1	M 12	1.75	1	M 12	1.75	1-1/2
1	M 14	2.00	1	M 14	2.00	1-1/2
1	M 16	2.00	1	M 16	2.00	1-1/2
1	M 18	2.50	1	M 18	2.50	1-1/2
1	M 20	2.50	1	M 20	2.50	1-3/4
1	M 22	2.50	1	M 22	2.50	1-3/4
1	M 24	3.00	1	M 24	3.00	1-3/4

## METRIC TAP & DIE SET No. HSS-45

Containing 33 Taps, 11 Dies and 1 Metric Thread Gage:

SIZE: 8½ x 26½ x 2¼ Inch

WEIGHT: 14½ Lbs



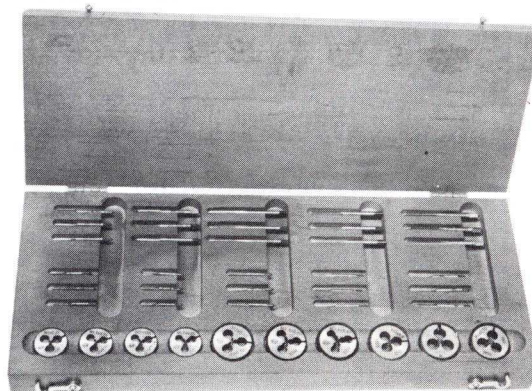
T A P S			D I E S			
3 Pc SET	SIZE mm	PITCH mm	EACH	SIZE mm	PITCH mm	O.D. Inch
1	M 1	0.25	1	M 1	0.25	13/16
1	M 1.2	0.25	1	M 1.2	0.25	13/16
1	M 1.4	0.30	1	M 1.4	0.30	13/16
1	M 1.7	0.35	1	M 1.7	0.35	13/16
1	M 2	0.40	1	M 2	0.40	13/16
1	M 2.3	0.40	1	M 2.3	0.40	13/16
1	M 2.6	0.45	1	M 2.6	0.45	13/16
1	M 3	0.50	1	M 3	0.50	13/16
1	M 3.5	0.60	1	M 3.5	0.60	13/16
1	M 4	0.70	1	M 4	0.70	1

## METRIC TAP & DIE SET No. HSS-40

Containing 30 Taps and 10 Dies as specified:

SIZE: 5½ x 13 x 1½ Inch

WEIGHT: 2¼ Lbs



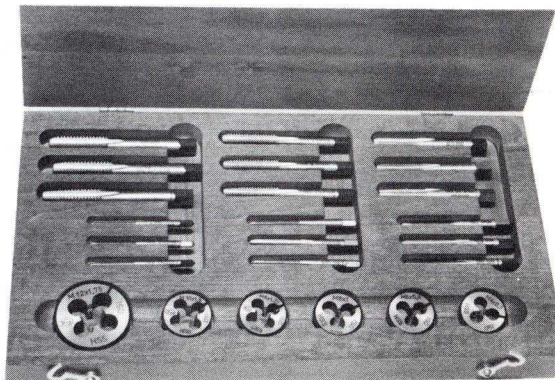
SIZE: 6¾ x 11½ x 1½ Inch

WEIGHT: 2¾ Lbs

T A P S			D I E S			
3 Pc SET	SIZE mm	PITCH mm	EACH	SIZE mm	PITCH mm	O.D. Inch
1	M 4	0.70	1	M 4	0.70	1
1	M 5	0.80	1	M 5	0.80	1
1	M 6	1.00	1	M 6	1.00	1
1	M 8	1.25	1	M 8	1.25	1
1	M 10	1.50	1	M 10	1.50	1
1	M 12	1.75	1	M 12	1.75	1-1/2

## METRIC TAP & DIE SET No. HSS-24

Containing 18 Taps and 6 Dies as specified:



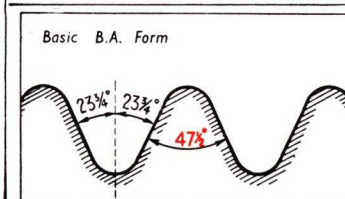
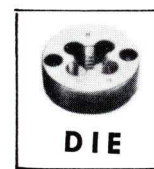
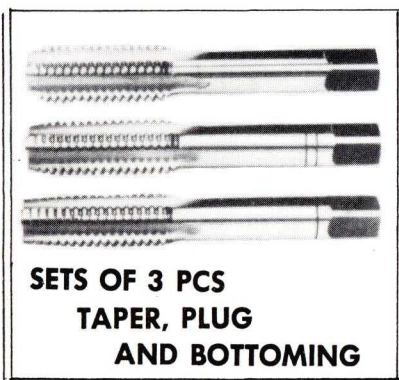


# BRITISH

## HIGH SPEED ADJUSTABLE ROUND

### GROUND THREAD HAND TAPS DIES

B.A.	NOMINAL DIA		PITCH mm	THREADS PER INCH Approx.	THREAD LENGTH Inches	OVERALL LENGTH Inches	O.D. Inches
	mm	Inches					
0	6	.2362	1.00	25.4	1	2-1/2	1
1	5.3	.2087	.90	28.2	7/8	2-3/8	1
2	4.7	.1850	.81	31.4	7/8	2-3/8	1
3	4.1	.1614	.73	34.8	3/4	2-1/8	13/16
4	3.6	.1417	.66	38.5	11/16	2	13/16
5	3.2	.1260	.59	43	5/8	1-15/16	13/16
6	2.8	.1102	.53	47.9	9/16	1-7/8	13/16
7	2.5	.0984	.48	53	1/2	1-13/16	13/16
8	2.2	.0866	.43	59.1	7/16	1-11/16	13/16
9	1.9	.0748	.39	65.1	3/8	1-5/8	13/16
10	1.7	.0669	.35	72.6	5/16	1-5/8	13/16
11	1.5	.0591	.31	82	5/16	1-5/8	13/16
12	1.3	.0512	.28	90.7	5/16	1-5/8	13/16
13	1.2	.0472	.25	101.6	1/4	1-1/4	13/16
14	1	.0394	.23	110	1/4	1-1/4	13/16
15	.9	.0354	.21	120.9	1/4	1-1/4	13/16
16	.8	.0311	.19	134	1/4	1-1/4	13/16



**(BRITISH ASSOCIATION)**

#### RECOMMENDED DRILL SIZES

B.A. No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DRILL mm	5.1	4.5	4	3.45	3	2.65	2.3	2.05	1.8	1.55	1.4	1.2	1.05	0.95	0.8	0.7	0.6

HOW TO ORDER: 2 BA HSGT TAP SET  
6 BA HSGT PLUG TAP  
3 BA HS DIE





# BRITISH HIGH SPEED GROUND THREAD HAND TAPS

NOMINAL DIA Inches	THREADS PER INCH	THREAD LENGTH Inches	OVERALL LENGTH Inches
BSW 1/8	40	45/64	1-7/8
BSW 5/32	32	7/8	2
BSW 3/16	24	15/16	2-3/16
BSF 3/16	32	25/32	2-3/16
BSW 7/32	24	15/16	2-1/4
BSF 7/32	28	25/32	2-1/4
BSW 1/4	20	1	2-5/16
BSF 1/4	26	25/32	2-5/16
BSW 5/16	18	1	2-9/16
BSF 5/16	22	15/16	2-9/16
BSW 3/8	16	1-3/16	2-13/16
BSF 3/8	20	1	2-13/16
BSW 7/16	14	1-3/16	2-7/8
BSF 7/16	18	1	2-7/8
BSW 1/2	12	1-3/16	3-1/8
BSF 1/2	16	1-3/16	3-1/8
BSW 9/16	12	1-3/8	3-3/8
BSF 9/16	16	1-3/8	3-3/8
BSW 5/8	11	1-3/8	3-1/2
BSF 5/8	14	1-3/8	3-1/2
BSW 11/16	11	1-3/8	3-1/2
BSF 11/16	14	1-3/8	3-1/2
BSW 3/4	10	1-5/8	3-7/8
BSF 3/4	12	1-5/8	3-7/8

**BSW (BRITISH STANDARD WHITWORTH)**

**BSF (BRITISH STANDARD FINE)**

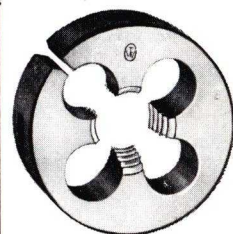
**TO CUT A NEW THREAD WE RECOMMEND USING 3 PC SET  
(TAPER - PLUG - BOTTOMING)**



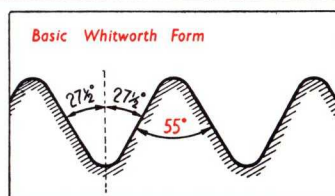
HOW TO ORDER: SET BSW 3/8 - 16 HSGT TAPS  
                            BSF 1/2 - 16 HSGT PLUG TAP  
                            SET BSF 5/16 - 22 HSGT TAPS

## HIGH SPEED ROUND DIES

CUTTING SIZE Inches	O.D. Inches
BSW 1/8	1
BSW 5/32	1
BSW 3/16	1
BSF 3/16	1
BSW 7/32	1
BSF 7/32	1
BSW 1/4	1
BSF 1/4	1
BSW 5/16	1
BSF 5/16	1
BSW 3/8	1
BSF 3/8	1
BSW 7/16	1½
BSF 7/16	1½
BSW 1/2	1½
BSF 1/2	1½
BSW 9/16	1½
BSF 9/16	1½
BSW 5/8	1½
BSF 5/8	1½
BSW 11/16	1½
BSF 11/16	1½
BSW 3/4	1½
BSF 3/4	1½



HOW TO ORDER : BSW 1/4 - -20 HS DIE  
                            BSF 7/16 - 18 HS DIE



SINGLE PLUG TAPS  
ARE AVAILABLE.

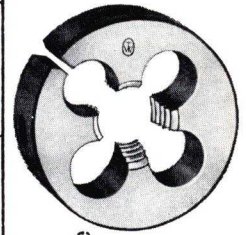


# BRITISH HIGH SPEED GROUND THREAD HAND TAPS

## HIGH SPEED ROUND DIES

NOMINAL DIA Inches	THREADS PER INCH	THREAD LENGTH Inches	OVERALL LENGTH Inches
BSW 13/16	10	1-3/4	4-3/16
BSF 13/16	12	1-9/16	4-3/16
BSW 7/8	9	1-3/4	4-7/16
BSF 7/8	11	1-9/16	4-7/16
BSW 15/16	9	1-3/4	4-3/4
BSW 1	8	1-3/4	4-3/4
BSF 1	10	1-3/4	4-3/4
BSW 1-1/8	7	1-3/4	5
BSF 1-1/8	9	1-3/4	5
BSW 1-1/4	7	1-15/16	5-1/4
BSF 1-1/4	9	1-15/16	5-1/4
BSW 1-3/8	6	2-1/8	5-3/4
BSF 1-3/8	8	2-1/8	5-3/4
BSW 1-1/2	6	2-5/16	6
BSF 1-1/2	8	2-5/16	6

CUTTING SIZE Inches	O.D. Inches
BSW 13/16	2
BSF 13/16	2
BSW 7/8	2
BSF 7/8	2
BSW 15/16	2
BSW 1	2
BSF 1	2
BSW 1-1/8	2 1/2
BSF 1-1/8	2 1/2
BSW 1-1/4	2 1/2
BSF 1-1/4	2 1/2
BSW 1-3/8	2 1/2
BSF 1-3/8	2 1/2
BSW 1-1/2	2 1/2
BSF 1-1/2	2 1/2



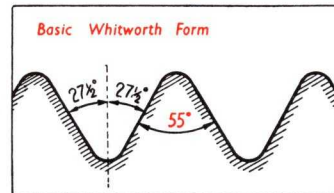
HOW TO ORDER: BSF 1"-10 HS Die

SINGLE PLUG TAPS ARE AVAILABLE



TO CUT A NEW THREAD WE RECOMMEND USING 3 PC SET  
TAPER - PLUG - BOTTOMING

RECOMMENDED DRILL SIZES  
FOR  
BSW and BSF HAND TAPS



NOM. DIAMETER	1/8	5/32	3/16	7/32	1/4	5/16	3/8	7/16	1/2	9/16	1-1/2
DRILL mm BSW	2.55	3.15	3.70	4.50	5.10	6.50	7.90	9.25	10.50	12	33.50
BSF	—	—	3.95	4.65	5.30	6.75	8.25	9.70	11	12.75	34.50
NOM. DIAMETER	5/8	11/16	3/4	13/16	7/8	15/16	1	1-1/8	1-1/4	1-3/8	
DRILL mm BSW	13.50	15	16.25	18	19.25	21	22	24.75	27.75	30.50	
BSF	14	15.50	16.75	18.50	19.75	—	22.75	25.50	28.75	31.50	

BSW (BRITISH STANDARD WHITWORTH)

BSF (BRITISH STANDARD FINE)

LARGER SIZES — PRICES ON REQUEST

HOW TO ORDER: SET BSW 13/16 - 10 HSGT TAPS  
BSF 7/8 - 11 HSGT PLUG TAP

LEFT HAND TAPS AND DIES - PRICES ON REQUEST





# BRITISH HIGH SPEED

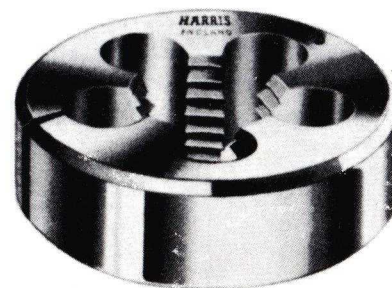
**BSP** (BRITISH STANDARD PIPE)

## GROUND THREAD HAND TAPS ROUND DIES

NOMINAL SIZE Inches	NOMINAL DIAMETER Inches	THREADS PER INCH	RECOMMENDED FOR TUBING mm	THREAD LENGTH Inches	OVERALL LENGTH Inches	CUTTING SIZE Inches	O.D. Inches
1/8	.383	28	5 x 10	19/32	2-1/8	1/8	1 1/2
1/4	.518	19	8 x 13	25/32	2-1/2	1/4	1 1/2
3/8	.656	19	12 x 17	15/16	2-15/16	3/8	1 1/2
1/2	.825	14	15 x 21	15/16	2-15/16	1/2	1 1/2
5/8	.902	14	16 x 23	15/16	2-15/16	5/8	2
3/4	1.041	14	21 x 27	1-3/32	3-1/8	3/4	2
7/8	1.189	14	24 x 31	1-3/32	3-1/8	7/8	2 1/2
1	1.309	11	26 x 34	1-3/32	3-1/8	1	2 1/2
1-1/8	1.492	11	29 x 38	1-5/16	3-1/2	1-1/8	2 1/2
1-1/4	1.650	11	33 x 42	1-5/16	3-1/2	1-1/4	3
1-3/8	1.745	11	36 x 45	1-5/16	3-1/2	1-3/8	3
1-1/2	1.882	11	40 x 49	1-5/16	3-1/2	1-1/2	3
1-3/4	2.116	11	45 x 55	1-9/16	3-7/8	—	—
2	2.347	11	50 x 60	1-9/16	3-7/8	—	—
2-1/4	2.587	11	60 x 70	1-3/4	4-5/16	—	—
2-1/2	2.960	11	66 x 76	1-15/16	4-3/4	—	—
3	3.460	11	80 x 90	2-3/8	5-1/2	—	—



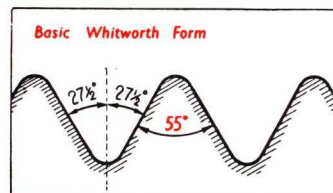
SETS OF 2 PCS BEGINNING AND FINISHING



### RECOMMENDED DRILL SIZES

NOM. SIZE	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	
DRILL mm	8.75	11.75	15.25	19	21	24.5	28.25	30.75	
NOM. SIZE	1-1/8	1-1/4	1-3/8	1-1/2	1-3/4	2	2-1/4	2-1/2	3
DRILL mm	35.25	39.5	41.75	45.25	51	57	63	72.5	85.25

HOW TO ORDER: 3/4" - 14 BSP HSGT TAP SET  
1/4 - 19 BSP HS DIE



**BSP**



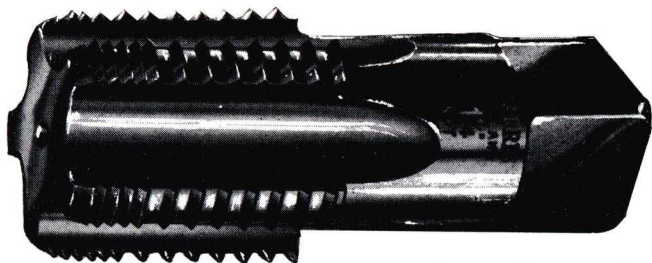
**BSPT (BRITISH STANDARD PIPE TAPERED)**

WHITWORTH FORM

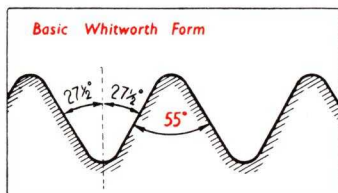
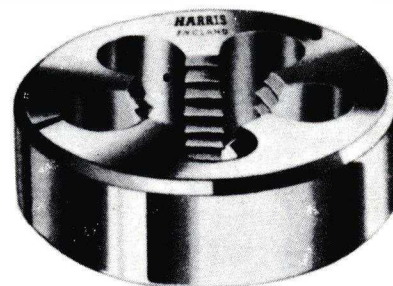
# BRITISH HIGH SPEED

## GROUND THREAD HAND TAPS      ROUND DIES

NOMINAL SIZE Inches	NOMINAL DIAMETER Inches	THREADS PER INCH	THREAD LENGTH Inches	OVERALL LENGTH Inches	DIAMETER OF		CUTTING SIZE Inches	O.D. Inches
					LARGE END Inches	SMALL END Inches		
1/8	.383	28	3/4	2-1/8	.3986	.3518	1/8	1 1/2
1/4	.518	19	1-1/16	2-7/16	.5336	.4672	1/4	1 1/2
3/8	.656	19	1-1/16	2-9/16	.6716	.6052	3/8	1 1/2
1/2	.825	14	1-3/8	3-1/8	.8484	.7625	1/2	1 1/2
5/8	.902	14	1-3/8	3-1/4	.9254	.8395	5/8	2
3/4	1.041	14	1-3/8	3-1/4	1.0644	.9785	3/4	2
7/8	1.189	14	1-3/8	3-1/4	1.2124	1.1265	7/8	2 1/2
1	1.309	11	1-3/4	3-3/4	1.3402	1.2308	1	2 1/2
1-1/4	1.650	11	1-3/4	4	1.6812	1.5718	1-1/4	3
1-1/2	1.882	11	1-3/4	4-1/4	1.9132	1.8038	1-1/2	3
2	2.347	11	1-3/4	4-1/2	2.3782	2.2688	2	—
2-1/2	2.960	11	2-9/16	5-1/2	2.9951	2.8350	2-1/2	—
3	3.460	11	2-5/8	6	3.4951	3.3311	3	—
3-1/2	3.950	11	2-11/16	6-1/2	3.9890	3.8210	3-1/2	—
4	4.450	11	2-3/4	6-3/4	4.4890	4.3171	4	—



*BSPT*



LARGER SIZES — PRICES ON REQUEST

HOW TO ORDER:

1/2 - 14 BSPT HSGT TAP

1" - 11 BSPT HS DIE





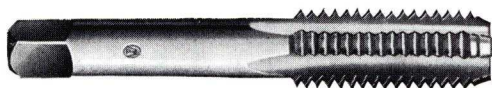
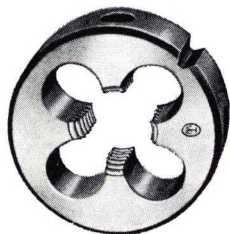
# BRITISH HIGH SPEED STEEL GROUND THREAD TAP AND DIE SETS

IN WOODEN BOXES

BSW (BRITISH STANDARD WHITWORTH)

BSF (BRITISH STANDARD FINE)

THREE TAPS (TAPER, PLUG AND BOTTOMING) FROM EACH SIZE ARE INCLUDED



CONTAINING 18 TAPS AND 6 DIES AS FOLLOWS:

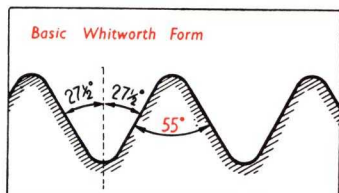
SIZE INCH	THREADS PER INCH	TAPS 3 Pc SET	DIES EACH	O.D. INCH
1/8	40	1	1	1
3/16	24	1	1	1
1/4	20	1	1	1
5/16	18	1	1	1
3/8	16	1	1	1
1/2	12	1	1	1 1/2

THE ABOVE SETS ARE SUPPLIED IN THE SAME CASE  
AS THE METRIC SET No. HSS-24,

CONTAINING 33 TAPS, 11 DIES, 1 WHITW. PITCH GAGE

SIZE INCH	THREADS PER INCH	TAPS 3 Pc SET	DIES EACH	O.D. INCH
1/4	26	1	1	1
5/16	22	1	1	1
3/8	20	1	1	1
7/16	18	1	1	1 1/2
1/2	16	1	1	1 1/2
9/16	16	1	1	1 1/2
5/8	14	1	1	1 1/2
11/16	14	1	1	1 1/2
3/4	12	1	1	1 1/2
7/8	11	1	1	2
1	10	1	1	2

THE ABOVE SETS ARE SUPPLIED IN THE SAME CASE  
AS THE METRIC SET No. HSS-45



BSW TAP & DIE SET No. HSBSW-45  
OR BSF TAP & DIE SET No. HSBSF-45



## DIE STOCKS

No.	SIZE	FOR DIES O.D.
12	1	13/16"
12	2	1"
12	3	1-1/2"
12	4	1-3/4"
12	5	2"
12	6	2-1/2"
12	7	3"



## TAP WRENCHES

No.	SIZE	FOR TAPS DIA
10	1	2 to 6 mm
10	2	4 to 12 mm
10	3	5 to 18 mm
10	4	6 to 20 mm
10	5	8 to 27 mm





# METRIC

TAPER 1:50

## HAND REAMERS DIN 206

## TAPER REAMERS DIN 9

SIZE mm	FLUTE LENGTH mm	OVERALL LENGTH mm	SIZE mm	FLUTE LENGTH mm	OVERALL LENGTH mm
1	20	45	8	65	125
1.5	27	55	8.5	65	130
2	30	63	9	65	130
2.5	35	70	9.5	70	140
3	40	80	10	70	140
3.5	50	95	11	75	145
4	50	95	12	75	155
4.5	55	105	13	80	160
5	55	105	14	85	170
5.5	55	110	15	90	175
6	55	110	16	90	180
6.5	60	120	17	95	190
7	60	120	18	100	195
7.5	65	125	19	100	205
			20	105	210

SIZE mm	DIAMETER AT		OVERALL LENGTH mm	LENGTH OF FLUTE mm
	SMALL END mm	LARGE END mm		
1	.9	1.46	46	28
1.5	1.4	2.14	57	37
1.6	1.5	2.24	57	37
2	1.9	2.86	68	48
2.5	2.4	3.46	74	53
3	2.9	4.16	85	63
4	3.9	5.40	100	75
5	4.9	6.64	115	87
6	5.9	8.28	150	119
6.5	6.4	8.78	150	119
8	7.9	10.72	177	141
10	9.9	13.16	205	163
12	11.86	15.74	240	194
13	12.86	16.74	240	194
14	13.86	17.74	240	194
16	15.84	20.52	290	234
20	19.80	25.20	340	270

MATERIAL: HIGH SPEED STEEL



### HAND REAMERS TOLERANCES

TOLERANCE LIMIT	M 1 to M 3	M 3.5 to M 6	M 6.5 to M 10	M 12 to M 18	M 20
IN mm Max.+	.008	.011	.013	.016	.018
IN mm Min.+	.004	.006	.007	.009	.010
IN INCHES Max.+	.00032	.00043	.00051	.00063	.00071
IN INCHES Min.+	.00016	.00024	.00028	.00035	.00039





# METRIC HIGH SPEED



## STRAIGHT SHANK TWIST DRILLS

DIA mm	OVERALL LENGTH mm	DIA mm	OVERALL LENGTH mm	DIA mm	OVERALL LENGTH mm	DIA mm	OVERALL LENGTH mm
0.50	36	2.80	62	6.20	99	10.00	135
0.55	36	2.85	62	6.25	99	10.10	135
0.60	36	2.90	62	6.30	99	10.25	135
0.65	36	2.95	62	6.40	99	10.50	150
0.70	36	3.00	67	6.50	100	10.75	150
0.75	36	3.10	67	6.60	100	11.00	150
0.80	36	3.15	67	6.70	100	11.25	150
0.85	36	3.20	67	6.75	100	11.50	160
0.90	36	3.25	67	6.80	100	11.75	160
0.95	36	3.30	67	6.90	100	12.00	160
1.00	44	3.40	67	7.00	105	12.25	165
1.05	44	3.45	75	7.10	105	12.50	165
1.10	44	3.50	75	7.20	105	12.75	165
1.15	44	3.60	75	7.25	105	13.00	165
1.20	44	3.70	75	7.30	105	13.25	175
1.25	44	3.75	75	7.40	105	13.50	175
1.30	44	3.80	75	7.50	110	13.75	175
1.35	44	3.90	75	7.60	110	14.00	175
1.40	52	3.95	75	7.70	110	14.25	175
1.45	52	4.00	79	7.75	110	14.50	180
1.50	52	4.10	79	7.80	110	14.75	180
1.55	52	4.20	79	7.90	110	15.00	180
1.60	52	4.25	79	8.00	115	15.25	190
1.65	52	4.30	79	8.10	115	15.50	190
1.70	52	4.40	79	8.20	115	15.75	190
1.75	52	4.50	85	8.25	115	16.00	190
1.80	52	4.60	85	8.30	115	16.25	200
1.85	52	4.65	85	8.40	115	16.50	200
1.90	52	4.70	85	8.50	120	16.75	200
1.95	52	4.75	85	8.60	120	17.00	200
2.00	55	4.80	85	8.70	120	17.25	205
2.05	55	4.90	85	8.75	120	17.50	205
2.10	55	5.00	89	8.80	120	17.75	205
2.15	55	5.10	89	8.90	120	18.00	210
2.20	55	5.20	89	9.00	125	18.25	210
2.25	55	5.25	89	9.10	125	18.50	210
2.30	55	5.30	89	9.20	125	18.75	210
2.35	55	5.40	89	9.25	125	19.00	210
2.40	55	5.50	95	9.30	125	19.25	220
2.45	55	5.60	95	9.40	125	19.50	220
2.50	62	5.70	95	9.50	130	19.75	220
2.55	62	5.75	95	9.60	130	20.00	220
2.60	62	5.80	95	9.70	130	20.25	220
2.65	62	5.90	95	9.75	130	20.50	220
2.70	62	6.00	99	9.80	130	20.75	220
2.75	62	6.10	99	9.90	130	21.00	220

## RECOMMENDED DRILLS for METRIC THREADS

STANDARD THREADS					FINE THREADS				
Nominal DIA mm	Pitch	Approx. threads per inch	Cast, Iron or similar	Steel, Cop- per, Alumin or similar	Nominal DIA mm	Pitch	Approx. threads per inch	Cast, Iron or similar	Steel, Cop- per, Alumin or similar
1	0.25	102	0.70mm	0.75mm	2	0.25	102	1.70mm	1.75mm
1.2	0.25	102	0.90	0.95	2.3	0.25	102	2.00	2.05
1.4	0.30	85	1.05	1.10	2.6	0.35	73	2.20	2.25
1.7	0.35	73	1.25	1.30	3	0.35	73	2.60	2.65
2	0.40	63	1.50	1.55	4	0.50	51	3.40	3.50
2.3	0.40	63	1.80	1.85	5	0.50	51	4.40	4.50
2.6	0.45	56	2.05	2.10	6	0.50	51	5.40	5.50
3	0.50	51	2.45	2.55	7	0.50	51	6.40	6.50
3.5	0.60	42	2.80	2.90	8	1.00	25	6.90	7.10
4	0.70	36	3.20	3.30	10	1.25	20	8.60	8.80
4.5	0.75	34	3.60	3.75	10	1.00	25	8.80	9.00
5	0.80	32	4.10	4.25	12	1.50	17	10.25	10.50
5.5	0.90	28	4.40	4.50	12	1.25	20	10.50	10.75
6	1.00	25	4.90	5.10	12	1.00	25	10.75	11.00
7	1.00	25	5.90	6.10	14	1.50	17	12.25	12.50
8	1.25	20	6.60	6.80	14	1.25	20	12.50	12.75
9	1.25	20	7.60	7.80	16	1.50	17	14.25	14.50
10	1.50	17	8.30	8.50	16	1.25	20	14.50	14.75
11	1.50	17	9.25	9.50	18	2.00	12½	15.75	16.00
12	1.75	14½	10.00	10.25	18	1.50	17	16.25	16.50
14	2.00	12½	11.75	12.00	20	2.00	12½	17.75	18.00
16	2.00	12½	13.75	14.00	20	1.50	17	18.25	18.50
18	2.50	10	15.25	15.50	22	2.00	12½	19.75	20.00
20	2.50	10	17.25	17.50	22	1.50	17	20.25	20.50
22	2.50	10	19.25	19.50	24	2.00	12½	21.75	22.00
24	3.00	8½	20.75	21.00	24	1.50	17	22.25	22.50

DRILL SIZE DEPENDS ALSO ON TOLERANCE OF THE THREAD

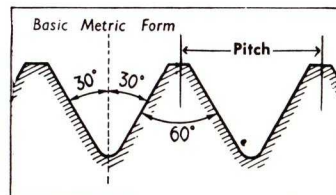


# METRIC

## THREAD PLUG AND RING GAGES

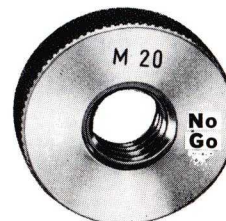
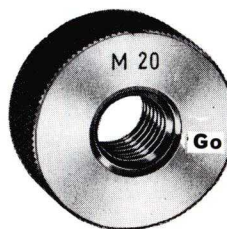
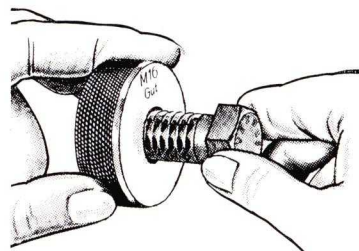
HIGH PRECISION IN ACCORDANCE WITH  
S.I. (Standard International) and GERMAN DIN 13

Gages are available also in FINE THREADS



SIZE mm	PITCH mm
M 1	0.25
M 1.2	0.25
M 1.4	0.30
M 1.7	0.35
M 2	0.40
M 2.3	0.40
M 2.6	0.45
M 3	0.50
M 3.5	0.60
M 4	0.70
M 4.5	0.75
M 5	0.80
M 5.5	0.90
M 6	1.00
M 7	1.00
M 8	1.25
M 9	1.25

SIZE mm	PITCH mm
M 10	1.50
M 11	1.50
M 12	1.75
M 14	2.00
M 16	2.00
M 18	2.50
M 20	2.50
M 22	2.50
M 24	3.00
M 27	3.00
M 30	3.50
M 33	3.50
M 36	4.00
M 39	4.00
M 42	4.50
M 45	4.50
M 48	5.00
M 52	5.00



"GO" and "NO GO" THREAD PLUG GAGE  
Catalog No. 50

"GO" "NO GO"  
THREAD RING GAGE THREAD RING GAGE  
Catalog No. 51 Catalog No. 52

## METRIC GAGE BLOCK SETS

DIN 861

APPLICATION: WORKING GAGES FOR THE TOOLROOMS  
SETTING GAGES FOR WORKSHOP GAGES AND MEASURING INSTRUMENTS

CATALOG No.	NUMBER OF BLOCKS	IN STEPS mm	COMBINATION OF EACH SET
P 5	1		1.005
	49	0.01	1.01 - 1.49
	4	0.1	1.60 - 1.90
	20	0.5	0.50 - 10.0
	9	10	20, 30, 40-100
P 6	9	0.001	1.001 - 1.009
	49	0.01	1.01 - 1.49
	19	0.5	0.50 - 9.50
	10	10	10 - 100

IN WOODEN CASE

83 PIECES SET

87 PIECES SET



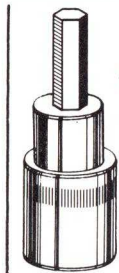
# METRIC

## HEX KEYS DIN 911

### FOR

## SOCKET SCREWS

mm	DIN 912	DIN 7984	DIN 7991	DIN 913-916
2		M 3	M 3	M 4
2.5		M 4	M 4	M 5
3	M 4	M 5	M 5	M 6
4	M 5	M 6	M 6	M 8
5	M 6	M 8	M 8	M 10
6	M 8		M 10	M 12
7		M 10		
8	M 10	M 12	M 12	M 16
9				
10	M 12	M 14	M 14 M 16	M 20
12	M 14	M 16 M 18	M 18 M 20	M 24
14	M 16 M 18	M 20 M 22	M 22 M 24	
17	M 20 M 22	M 24		
19	M 24 M 27			
22	M 30			
24	M 33			



HEX KEY SOCKETS FOR

SOCKET SCREWS

#### Conversion Tables

1 ksi	= 1000 psi
1 kip	= 1000 lbs
1 ft-lb (foot-pound)	= 0.138 254 mkp
1 mkp	= 7.233 ft-lbs
1 inch-lb	= 0.0115 mkp
1 inch-lb	= 1.152 1 cmkp
1 cmkp	= 0.867 98 inch-lb
1 HP (horse power)	= 1.013 9 PS
1 PS	= 0.986 3 HP
1 mkp/cm <sup>2</sup>	= 46.7 ft-lbs per sq. in.
	= 560 inch-lbs per sq. in.
1 ft.-lb/inch <sup>2</sup>	= 0.021 4 kpm/cm <sup>2</sup>
1 inch-lb/inch <sup>2</sup>	= 0.001 783 kpm/cm <sup>2</sup>
1 inch (Zoll)	= 25.399 541 mm (Millimeter) (25. 4)
1 mm (Millimeter)	= 0.039 37 inch (Zoll)
1 foot	= 0.304 8 m
1 m	= 3.280 8 ft
1 yard	= 0.914 4 m
1 m	= 1.093 4 yards
1 statute mile	= 1.609 3 km
1 km	= 0.621 4 statute mile

990/7 XZN

Poligon  
Head-Sockets

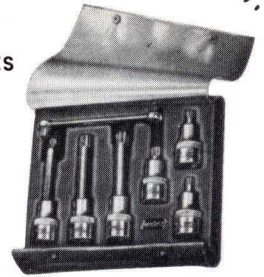
6mm, 8mm, 8mm 1g.  
10mm, 10mm 1g.  
12mm and one of  
the XZN double Wrench.



CHROME-VANADIUM

DRIVE -7 Pcs SOCKET SET

Special High Tensile Steel, in a  
plastic container.



# METRIC

## Recommended Torque

FOR

WRENCHES

SOCKETS

Suggested TORQUE  
kpm

kpm

MATERIAL	mm		WRENCHES			SOCKETS			
	8.8	10.9	4	4.5	5	1/4"	3/8"	1/2"	3/4"
M 2	0,04	0,05				0,18	1,0		
M 2,3	0,06	0,08				0,26	1,3		
M 2,6	0,08	0,11							
M 3	0,13	0,18							
M 3,5	0,2	0,27							
M 4	0,29	0,4							
M 5	0,57	0,8							
M 6	1	1,4							
M 7	1,6	2,3							
M 8	2,5	3,5							
M 10	4,5	6,5							
M 12	8	11,5							
M 14	13	18,5							
M 16	20	27,2							
M 18	26,5	37,3							
M 20	38	53,5							
M 22	51	72,5							
M 24	65	92							
M 27	98	138							
M 30	134	188							
M 33	183	258							





# METRIC 450

## DOUBLE OPEN END WRENCHES

CHROME-VANADIUM STEEL

CHROME PLATED — BRIGHT HEADS

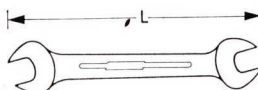
CATALOG No.	OPENING mm	OVERALL LENGTH Inches
450	4x5	4-7/8
450	6x7	4-7/8
450	8x9	5-1/2
450	10x11	6-1/4
450	12x13	6-3/4
450	14x15	7-1/2
450	16x17	8
450	18x19	8-1/2
450	20x22	8-3/4
450	21x23	9-1/2
450	24x26	10
450	25x28	11
450	27x30	11-3/4
450	32x36	13
450	38x42	14
450	41x46	15-3/4

### ALTERNATE OPENING COMBINATIONS

450	6x8	4-7/8
450	8x10	5-1/2
450	9x10	5-1/2
450	13x15	7-1/2
450	14x17	8
450	17x19	8-1/2
450	19x22	8-3/4
450	26x29	11-3/4
450	27x32	11-3/4
450	36x41	14
450	46x50	17

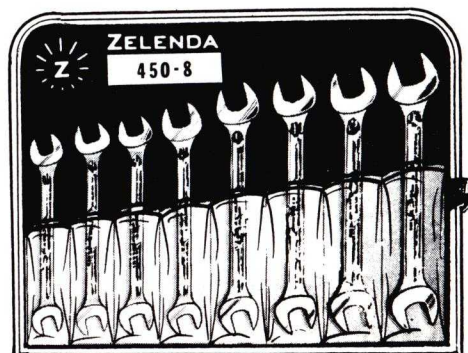


No. 450



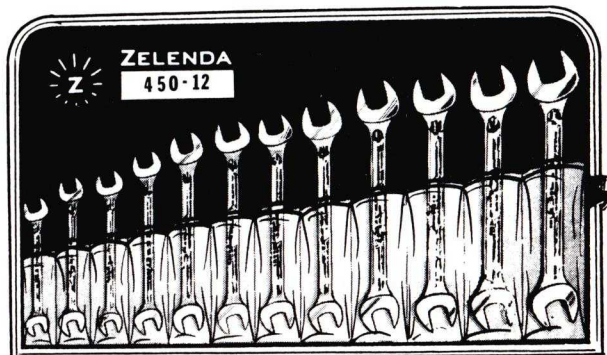
### SETS

OF DOUBLE OPEN END WRENCHES No. 450  
IN VINYL POUCH



#### 8 PIECE SET No. 450-8

SIZES: 4x5, 6x7, 8x9, 10x11, 12x13, 14x15, 16x17, 18x19



#### 12 PIECE SET No. 450-12

SIZES: 6x7, 8x9, 10x11, 12x13, 14x15, 16x17, 18x19, 20x22, 21x23, 24x26, 25x28, 27x30



# METRIC HEX KEY SETS IN VINYL POUCH

WITH GUIDE  
DIN 6911



No. 6911-7 (7 pieces set)  
Sizes: 3mm to 12mm



No. 911-8 (8 pcs set) 0.71 to 4mm.



No. 911-10 (10 pcs SET)  
1.5mm to 12 mm.

**DIN 911**



# METRIC MIDGET WRENCHES

CHROME-VANADIUM STEEL  
CHROME PLATED

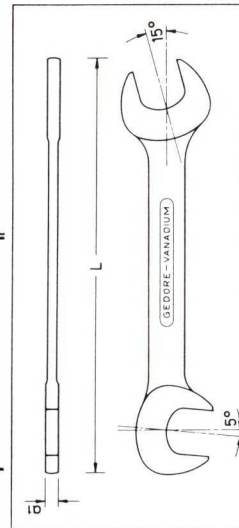


15° and 75° ANGLE OPENINGS

CATALOG No.	OPENING mm	OVERALL LENGTH Inches
8M-4	4x4	3
8M-4.5	4.5x4.5	3
8M-5	5x5	3
8M-5.5	5.5x5.5	3
8M-6	6x6	3
8M-7	7x7	3
8M-8	8x8	3-1/2
8M-9	9x9	3-3/4
8M-10	10x10	4
8M-11	11x11	4
8M-12	12x12	4-1/2
8M-13	13x13	4-1/2
8M-14	14x14	4-1/2
8M-15	15x15	4-1/2
8M-16	16x16	5-1/2
8M-17	17x17	5-3/4

HOW TO ORDER: # 8 M - 6 x 6 Midget Wrench  
SET No. 8M/0100 Midget Wrenches  
SET No. 8M/0160 Midget Wrenches

8M



10 PIECE SETS  
No. 8M/0100  
SIZES 5 to 13 mm



16 PIECE SETS  
No. 8M/0160  
SIZES 4 to 17 mm

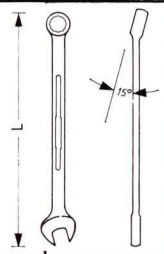


# METRIC

## COMBINATION BOX AND OPEN END WRENCHES

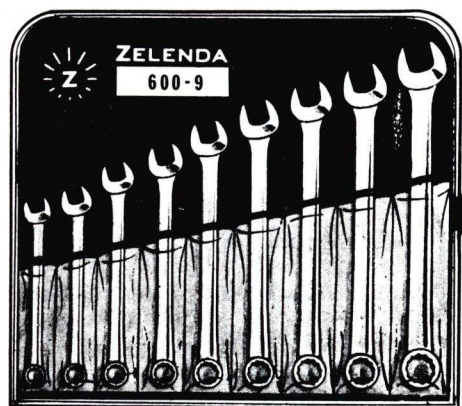
### 600

**CHROME - VANADIUM STEEL**  
CHROME PLATED — BRIGHT HEADS

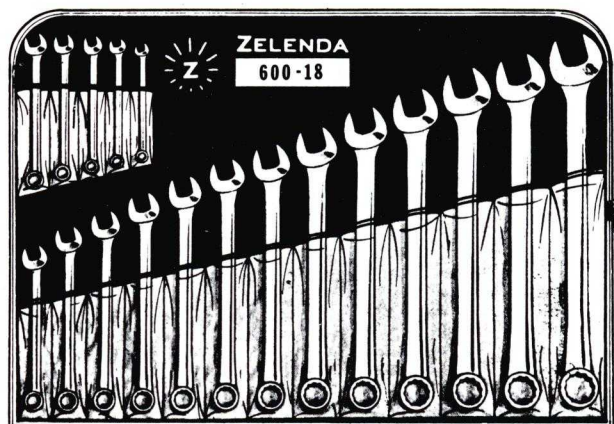


CATALOG No.	OPENING mm	OVERALL LENGTH Inches
600-6	6x6	5¼
600-7	7x7	5½
600-8	8x8	5¾
600-9	9x9	6¼
600-10	10x10	6½
600-11	11x11	6¾
600-12	12x12	7
600-13	13x13	7½
600-14	14x14	7¾
600-15	15x15	8½
600-16	16x16	9
600-17	17x17	9½
600-18	18x18	10
600-19	19x19	10½
600-20	20x20	11
600-21	21x21	11
600-22	22x22	12
600-23	23x23	13
600-24	24x24	13
600-25	25x25	14
600-26	26x26	14
600-27	27x27	15
600-28	28x28	15
600-30	30x30	16
600-32	32x32	16
600-36	36x36	17
600-41	41x41	18

**SETS**  
OF COMBINATION WRENCHES No. 600  
IN VINYL POUCH



**9 Pc SET No. 600-9**  
SIZES 6 to 14 mm



**18 Pc SET No. 600-18**  
SIZES 14 to 36 MM



# METRIC

No. 630-45° Deep Offset

No. 625-30° Offset

## DOUBLE OFFSET BOX WRENCHES

CHROME-VANADIUM STEEL

CHROME PLATED - BRIGHT HEADS - LONG PATTERN

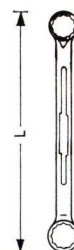
CATALOG No.	OPENING mm	OVERALL LENGTH Inches
625	6x7	7-1/2
625	8x9	7-1/2
625	10x11	8
625	12x13	9
625	14x15	9-1/2
625	16x17	10-1/2
625	18x19	11
625	20x22	12-1/4
625	21x23	12-3/4
625	24x26	13-1/2
625	25x28	13-3/4
625	27x30	14-1/2
625	32x36	16
625	36x41	17

### ALTERNATE OPENING COMBINATIONS

625	9x11	8
625	11x14	9-1/4
625	12x14	9-1/2
625	13x15	10
625	14x17	10-1/2
625	17x19	11
625	19x22	12
625	22x24	13
625	22x27	13-1/2
625	24x27	14
625	27x32	15
625	30x32	15-1/2

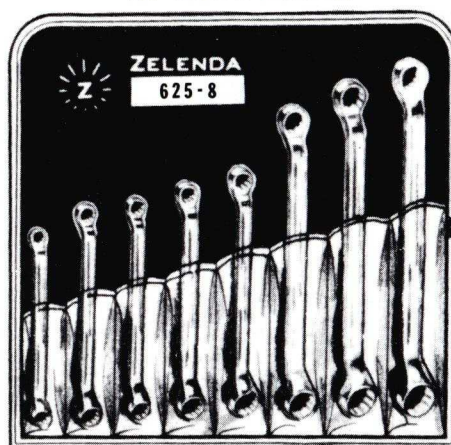


625



### SETS

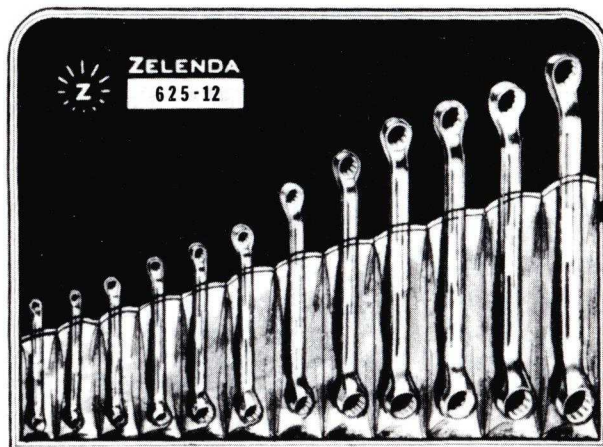
IN VINYL POUCH



#### 8 PIECE SET No. 625-8

SIZES: 6x7, 8x9, 10x11, 12x13, 14x15, 16x17, 18x19, 20x22

#### 8 PIECE SET No. 630-8



#### 12 PIECE SET No. 625-12

SIZES: 6x7, 8x9, 10x11, 12x13, 14x15, 16x17, 18x19, 20x22, 21x33, 24x26, 25x28, 27x30

#### 12 PIECE SET No. 630-12



630



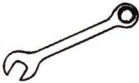
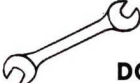


# METRIC WRENCHES

DESIGNED FOR MAXIMUM STRENGTH


CHROME - VANADIUM STEEL

CHROME PLATED — BRIGHT HEADS

 <b>No. 40</b> COMBINATION WRENCHES			 <b>No. 33</b> DOUBLE OPEN END WRENCHES		
CATALOG No.	OPENING mm	OVERALL LENGTH Inches	CATALOG No.	OPENING mm	OVERALL LENGTH Inches
#40-8	8x8	5	#33	4x5	5
40-9	9x9	6	33	9x12	6
40-11	11x11	6 $\frac{1}{2}$	33	10x11	6
40-12	12x12	6 $\frac{1}{2}$	33	14x15	7 $\frac{1}{4}$
40-15	15x15	8	33	16x17	7 $\frac{1}{2}$
40-16	16x16	8	33	16x18	8
40-18	18x18	8 $\frac{1}{2}$	33	16x19	8 $\frac{1}{4}$
40-19	19x19	9	33	18x19	8 $\frac{1}{4}$
40-20	20x20	9	33	20x22	8 $\frac{1}{2}$
40-21	21x21	10	33	25x27	10 $\frac{1}{4}$
40-22	22x22	10	33	28x30	11 $\frac{1}{4}$
40-23	23x23	10	33	29x32	11 $\frac{1}{4}$
40-24	24x24	10 $\frac{1}{4}$	33	32x35	12 $\frac{1}{4}$
40-25	25x25	10 $\frac{1}{4}$	33	38x42	14
40-26	26x26	10 $\frac{1}{4}$			
40-27	27x27	10 $\frac{1}{2}$	<b>No. 65</b> DOUBLE OFFSET BOX WRENCHES		
40-28	28x28	10 $\frac{1}{2}$	#65	6x7	6 $\frac{1}{4}$
40-29	29x29	10 $\frac{1}{2}$	65	8x9	7
40-30	30x30	10 $\frac{1}{2}$	65	9x11	7 $\frac{1}{2}$
40-31	31x31	10 $\frac{1}{2}$	65	10x11	8
40-32	32x32	10 $\frac{1}{2}$	65	12x13	8 $\frac{1}{2}$
			65	12x14	8 $\frac{1}{2}$
			65	13x15	9 $\frac{1}{4}$
			65	14x15	9 $\frac{1}{2}$
			65	16x17	10
			65	16x18	10
			65	18x19	11
			65	21x23	12 $\frac{1}{2}$
			65	24x26	13 $\frac{1}{2}$
			65	25x27	14 $\frac{1}{2}$
			65	28x30	15 $\frac{1}{2}$
			65	29x32	16 $\frac{1}{4}$
			65	36x41	19 $\frac{1}{2}$

STRIKING FACE WRENCHES No. <span style="border: 2px solid red; border-radius: 50%; padding: 2px 5px;">133</span>	
OPENING mm	LENGTH mm
46	255
50	280
55	315
60	320
65	350
70	360
75	400
80	405



No. 133

**15° ANGLE**



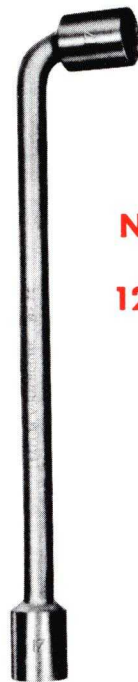


# METRIC SOCKET WRENCHES

CHROME-VANADIUM STEEL CHROME PLATED — BRIGHT HEADS

CATALOG No. 72 75

OPENING mm	OVERALL LENGTH Inch	OVERALL LENGTH Inch
8	4-5/16	4-9/16
9	4-3/4	4-9/16
10	5-1/8	4-15/16
11	5-1/2	5-1/8
12	5-7/8	5-7/8
13	6-5/16	5-7/8
14	6-11/16	6-7/8
15	7-1/16	7-1/16
16	7-1/2	7-11/16
17	7-7/8	7-11/16
18	8-5/16	8-1/16
19	8-3/4	8-7/16
20	9-3/16	8-11/16
21	9-5/8	8-11/16
22	10-1/16	8-11/16
23	10-1/2	8-11/16
24	10-7/8	9-1/16
25	11-5/16	9-1/16
26	11-3/4	9-1/16
27	12-3/16	9-7/16
28	12-5/8	9-7/16
29	13-1/16	9-7/16
30	13-1/2	10-1/4
31	13-15/16	10-7/16
32	14-3/8	10-5/8



No. 72

12 POINT



No. 75

6 POINT



## METRIC SQUARE DRIVE SOCKET SET

CHROME-VANADIUM STEEL

CHROME PLATED

1/4"

20  
E

CONSISTING OF 11 SOCKETS

Sockets	4	4,5	5	5,5
	6	7	8	9
	10	11	13 mm	



NO 20 EMU



# METRIC SQUARE DRIVE SOCKETS

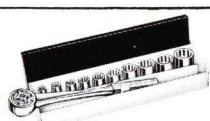


CHROME-VANADIUM STEEL CHROME PLATED

**1/4"**



R226



## SOCKETS

OPENING  
mm

**R** 4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14

## ATTACHMENTS

CAT. No.	DESCRIPTION	LENGTH Inch
R120	T-HANDLE	4-1/2
R125	SLIDING BAR	4-1/2
R140	FLEX. HANDLE	5-1/2
R150	REVERSE RATCHET	4-1/2
R210	EXTENSION	2-3/4
R215	EXTENSION	5-1/4
R226	SPINNER HANDLE	6
R227	SPINNER HANDLE	10-1/2
R232	ADAPTER	1
R240	UNIVERSAL JOINT	1-3/8

### 14 Pc SET No. BR-14

CONSISTING OF 11 SOCKETS SIZES 4 to 14 mm,  
ONE REVERSE RATCHET R150, ONE EXTENSION R210,  
ONE SPINNER HANDLE IN METAL BOX

R 232 = 1/4 F - 3/8 M

**3/8"**



J125



**J**

## SOCKETS

CATALOG No.

6 POINT 12 POINT

J 6 H	J11
J 7 H	J12
J 8 H	J13
J 9 H	J14
J10 H	J15
—	J16
—	J17
—	J18
—	J19
—	J20
—	J21
—	J22

## ATTACHMENTS

CAT. No.	DESCRIPTION	LENGTH Inch
J110	SPEED HANDLE	15
J120	T-HANDLE	8
J125	SLIDING BAR	7
J140	FLEXIBLE HANDLE	9
J150	REVERS. RATCHET	7
J210	EXTENSION	5
J215	EXTENSION	10
J230	ADAPTOR	1
J232	ADAPTOR	1-1/4
J240	UNIVERSAL JOINT	2

J230 = 3/8F-1/4M; J232 = 3/8F-1/2M



J210



J215



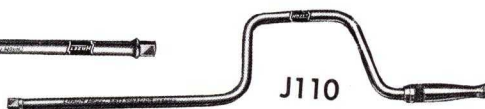
J120



J150



J140



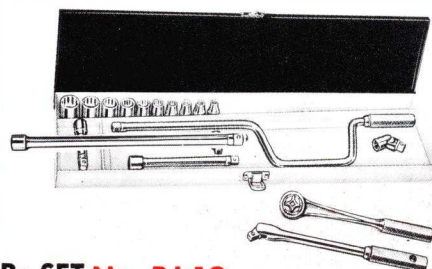
J110



J240



J230



### 19 Pc SET No. BJ-19

CONSISTING OF 14 SOCKETS SIZES 8 to 21 mm,  
ONE SPEED HANDLE J110  
ONE T-HANDLE J120  
ONE REVERS. RATCHET J150  
ONE EXTENSION J210  
ONE UNIVERSAL JOINT J240





# METRIC SQUARE DRIVE SOCKETS

CATALOG No.		OPENING mm	CAT. No.	ATTACHMENTS DESCRIPTION	LENGTH Inch
6 POINT	12 POINT				
S10H	S10	10	S110	SPEED HANDLE	15
S11H	S11	11	S120	T-HANDLE	11
S12H	S12	12	S125	SLIDING BAR	8
S13H	S13	13	S140	FLEXIBLE HANDLE	9
S14H	S14	14	S141	FLEXIBLE HANDLE	14-1/2
S15H	S15	15	S150	REVERS. RATCHET	10
S16H	S16	16	S155	ADAPT. REV. RATCHET	2
S17H	S17	17	S210	EXTENSION	5
S18H	S18	18	S215	EXTENSION	10
S19H	S19	19	S230	ADAPTER	1-1/2
S20H	S20	20	S232	ADAPTER	1-3/4
S21H	S21	21	S234	REPOSITIONER	2-1/2
S22H	S22	22	S240	UNIVERSAL JOINT	3
S23H	S23	23			
S24H	S24	24			
S25H	S25	25			
S26H	S26	26			
S27H	S27	27			
S28H	S28	28			
S29H	S29	29			
S30H	S30	30			
S32H	S32	32			

**1/2" S**  
**CHROME-VANADIUM**



**1/2"**

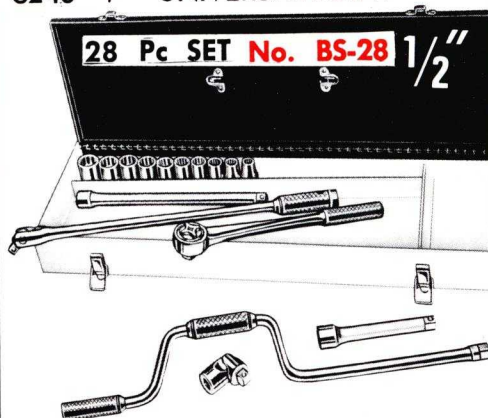
**CHROME PLATED**



**3/4"**

## DEEP SOCKETS 1/2" DRIVE

CAT. No.	OPENING	LENGTH
S14L	14	3"
S16L	16	3"
S17L	17	3"
S19L	19	3"
S21L	21	3"
S23L	23	3 1/2"
S26L	26	3 1/2"



CONSISTING OF 22 SOCKETS SIZES 10 to 32 mm,  
ONE SPEED HANDLE S110, ONE T-HANDLE S120,  
ONE REVER. RATCHET S150, ONE EXTENSION S210,  
ONE EXTENSION S215, ON UNIVER. JOINT S240

**32**



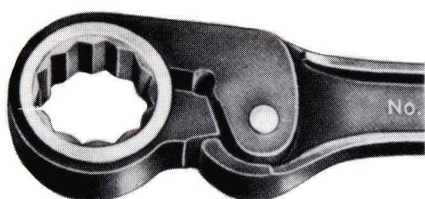
<b>3/4"</b> <b>K</b>	CAT. No.	OPENING mm	CAT. No.	ATTACHMENTS DESCRIPTION	LENGTH Inch
	12 POINT	mm			
	K 23	23	K 120	SLIDING T HANDLE	17
	K 24	24	K 140	HINGE HANDLE	3 1/2
	K 26	26			
	K 27	27	K 125	PIN USED AS AN EXTEN- SION HANDLE ON THE K150 AND K140	17
	K 29	29			
	K 30	30	K 150	REVERSIBLE RATCHET	6 1/2 & 17
	K 32	32	K 210	SHORT EXTENSION	7 7/8
	K 35	35			
	K 36	36	K 215	LONG EXTENSION	15-3/4
	K 38	38			
	K 40	40	K 230	ADAPTER 3/4" to 1/2"	2 1/4
	K 41	41			
	K 42	42	K 232	ADAPTER 3/4" to 1"	2 1/2
	K 46	46			
	K 50	50	K 240	UNIVERSAL JOINT	4
	K 54	54			
	K 58	58			



# METRIC

## DOUBLE ENDED and SINGLE ENDED OPEN END WRENCHES

Selected Carbon Steel B = gun metal, bright heads Black



### FRICTION TYPE RATCHETS

31



OPENING	LENGTH
mm	mm
8	150
9	150
10	150
11	150
12	150
13	150
14	205
15	205
16	205
17	205
18	255
19	255
21	255
22	255
23	255

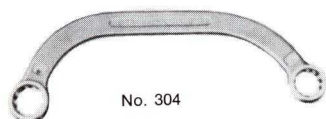
31  
R



Inserts, bi-hexagon,  
**GEDORE VANADIUM**  
Finish P = polished

### BIHEX HALF MOON RING SPANNERS

304



No. 304

mm	L mm
11 x 13	150
13 x 17	185
14 x 17	185
15 x 17	185
19 x 22	230
	230

**GEDORE-VANADIUM** (VDEh 31 CrV 3)  
Finish CS = chrome plated, rings polished

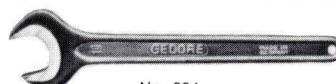
895



No. 895

CATALOG No.	OPENING mm	OVERALL LENGTH Inches
895	6 x 7	3-1/2
895	7 x 8	4-1/4
895	8 x 10	4-1/2
895	9 x 11	4-3/4
895	10x 12	4-3/4
895	12x 13	4-3/4
895	12x 14	4-3/4
895	13x 15	5-1/2
895	14x 17	6
895	17x 22	7-1/2
895	19x 24	8
895	22x 27	9-1/2
895	24x 30	10-1/2
895	30x 32	11
895	32x 36	12

894



No. 894

CATALOG No.	OPENING mm	OVERALL LENGTH Inches
894	10	4
894	11	4-1/2
894	12	5
894	13	5
894	14	5-1/2
894	17	6
894	19	6-3/4
894	22	7-3/4
894	24	8-1/2
894	27	9-1/4
894	30	10
894	32	10-1 2
894	36	12
894	41	13





# METRIC HEX KEYS

## HEX KEYS SOCKETS

# NUT DRIVERS

## SOCKET WRENCHES

### DRIVE

**1/4"**

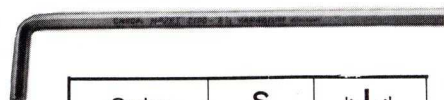
BIT SIZE ACROSS FLATS	CAT. No.	OVERALL LENGTH mm
3	RT 3	38
4	RT 4	38
5	RT 5	38
6	RT 6	38

**3/8"**

3	JT 3	46
4	JT 4	46
5	JT 5	46
6	JT 6	46
8	JT 8	52
10	JT 10	52

**1/2"**

8	ST 8	62
10	ST 10	62
12	ST 12	72
14	ST 14	72
17	ST 17	72
19	ST 19	72



Order- No.	S mm	L mm
2100-02 Lg	2	100
025 Lg	2,5	112
03 Lg	3	126
04 Lg	4	142
05 Lg	5	160
06 Lg	6	180
08 Lg	8	200
10 Lg	10	224
12 Lg	12	250
14 Lg	14	280

per DIN 911

**2100 Lg**



long pattern

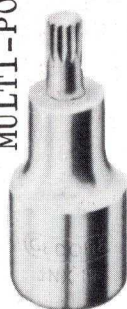
CHROME-VANADIUM  
Bright nickel-plated

MULTI-POINT HEX KEY SOCKETS

**3/8"**



**1/2"**



Order- No.	SIZE mm	LENGTH
INX 30/4	M 4	47
INX 30/5	M 5	47
INX 30/6	M 6	47
INX 30/8	M 8	47
INX 19/ 5	M 5	55
INX 19/ 6	M 6	55
INX 19/ 8	M 8	55
INX 19/ 8 Lg	M 8	100
INX 19/10	M 10	55
INX 19/10 Lg	M 10	100
INX 19/12	M 12	55
INX 19/12 Lg	M 12	90
990-14	14	58
16	16	60



XZN

**2114**

8mm

10mm



**NUT DRIVER No. 74**

CAT. No.	OPENING mm	OVERALL LENGTH Inch
74	4	9-1/16
74	5	9-1/16
74	6	9-1/16
74	7	9-7/16
74	8	9-7/16
74	9	9-7/16
74	10	9-7/16

**7 Pc SET No. 74JL-7**

SIZES 4 to 10 mm IN CANVAS ROLL

# SCREWDRIVERS

plastic handle.

Electrician's Screwdriver  
for slotted Screws, with high  
impact plastic handle.

No.
150/4,5 (B)
150/5,5 (C)
150/6
150/7 (D)
150/9 (E)



mm	mm	mm	mm
4,5	0,6	100	190
5,5	0,8	125	225
6	1,0	150	260
7	1,2	150	260
9	1,2	150	260

**171**

No.
171/2,3
171/3
171/4
171/5
171/2,8
171/3,5
171/4,5
171/6



mm	mm	mm	mm
2,3	0,4	50	130
3	0,5	75	165
4	0,6	100	200
5	0,8	150	255
2,8	0,6	75	165
3,5	0,8	100	200
4,5	1,0	125	230
6	1,2	150	260

**150**



# METRIC Special Tools



## Sparkplug Wrench 2502

with angular handle bar 190 mm long



## Socket T-Handles

CHROME-VANADIUM

8 mm Square opening



2514

## Socket Wrenches

with Universal Joint

Order-  
No. **2527**

2527 - 13

2527 - 14



### Applications:

Removing and installing the fuel pump  
with nuts of 13 and/or 14 mm  
13 mm:  
14 mm:

## Double-Hex Box Wrench

CHROME-VANADIUM

### Applications:

Loosening and tightening  
10 mm: the oil cooler nuts  
14 mm: the carburettor flange screws  
14 mm: the exhaust pipes on the flywheel side



2509

## Special Double-Hex Box Wrench

CHROME-VANADIUM

27 x 36



2560

## Single Open End Wrenches

CHROME-VANADIUM

2513

straight and offset

27 mm  
32 mm  
24 mm



a = straight



b = offset

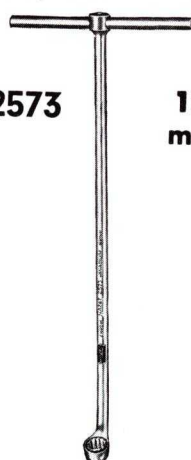
**2 Pc SET**

## Special Wrench

CHROME-VANADIUM

2573

10 mm



## Double-Hex Box Wrench

CHROME-VANADIUM

21 mm head at a 15° angle to the shank

21 x 36



2561

## Special Box Wrench

CHROME-VANADIUM

2569

mm  
17 x 17



### Application:

Readjusting the roller steering gear  
(plastic handle of screwdriver has  
10 mm male hexagon to operate same  
with open-end or flat box wrench),  
box wrench end for loosening and  
tightening the lock nut on the set  
screw for the steering gear roller shaft

## Valve Setting Gauge

with 10 spare blades

Order-  
No.

mm

2520 - 10

0,10

20

0,20

30

0,30

### Spare blades

2520 - 010

0,10

020

0,20

030

0,30



2520

## Piston Ring Compressors



2523

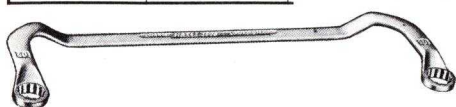
- 75 for piston diameters of 75-76 mm  
77 for piston diameters of 77-78 mm  
83 for piston diameters of 83-84 mm  
85 for piston diameters of 85-86 mm

## Special Box Wrench

CHROME-VANADIUM

2578 - 10	10 x 10
2578 - 13	13 x 13

Application:  
For re-tightening the nuts on the oil pump  
cover (to be applied to the right-hand and  
left-hand pairs of nuts from the right-hand  
and left-hand sides, respectively).



2578

## Special Double Open End Wrench

CHROME-VANADIUM

Heads set at 15° and 60°

mm  
9 x 9



2587

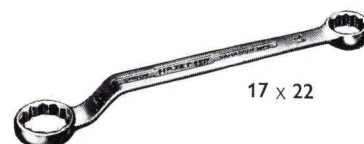
### Application:

For loosening and tightening the magnetic pilot jet of the  
Solex carburettor

## Special Box Wrench

CHROME-VANADIUM

2577



17 x 22





# PLIERS

## Long Nose Side Cutting Pliers



No ZP 126

## Universal or Waterpump Pliers



760

## RETAINING RING PLIERS

### STRAIGHT TIPS FOR INTERNAL RINGS

**CAT. No. Z-P 179**

OVERALL LENGTH 6 1/4"



No. O300

### STRAIGHT TIPS FOR EXTERNAL RINGS

**CAT. No. Z-P 177**

OVERALL LENGTH 7"



No. O400

### BENT TIPS FOR EXTERNAL RINGS

**CAT. No. Z-P 197**

OVERALL LENGTH 7"



### BENT TIPS FOR INTERNAL RINGS

**CAT. No. Z-P 199**

OVERALL LENGTH 6 1/4"



## CUSHION GRIP

## Diagonal Cutters



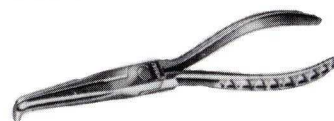
No. ZP 316



8210/6"

## COMBINATION PLIERS

No. 122 B



# CIRCLIP

## SLIP JOINT COMBINATION PLIERS

Selected Carbon Steel DIN 17 200 / No. 10501



8272 A

6 1/2"

## End Cutting Pliers

1807



## Special Locking Pliers 8134.

6-3/4 Long



## Lockring Pliers

2525 K

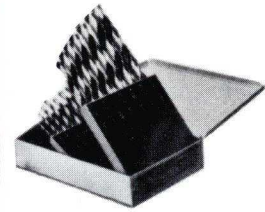


### Applications:

Removing and mounting the lockring on the drive pinion shaft, the circlip on the dual ball bearing of the drive pinion shaft, the lockring on the rear axle drive shaft  
Removing the lockring on the driving shaft, the lockring for the ignition distributor drive gear on the crankshaft



# METRIC SUPER HIGH SPEED STEEL DRILL SETS



SET No.	
<u>1-41A</u>	41 pieces set from 1 mm to 5 mm (5mm incl.), in steps of 0.1mm. In Metal Index Box.
<u>2-50B</u>	50 pieces set from 1 mm to 5.9 mm (5.9 mm incl.) in steps of 0.1 mm. In Metal Index Box.
<u>3-41C</u>	41 pieces set from 6 mm to 10 mm (10 mm incl.) in steps of 0.1 mm. In Metal Index Box.
<u>4-19D</u>	19 pieces set from 1 mm to 10 mm (10 mm incl.) in steps of 0.5 mm. In Metal Index Box.
<u>5-25E</u>	25 pieces set from 1 mm to 13 mm (13 mm incl.) in steps of 0.5 mm. In Metal Index Box.



SAMPLES OF SOME SPECIAL ITEMS WE MANUFACTURE



## Special Tools

WEIGHT 100 GRAMS, CAT. No. H 8605/1

WEIGHT 300 GRAMS, CAT. No. H 8605/3

WEIGHT 500 GRAMS, CAT. No. H 8606/5



**NYLON HAMMER**

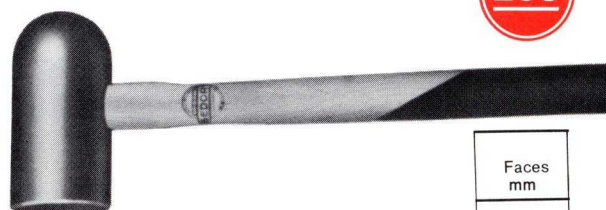
Recoil-Free, Rubber Grip, Steel Handle

267

### RUBBER Mallet

with one flat and one round striking face

258



Faces	mm
O	57

615



**FLEXIBLE OIL-CARBON SCRAPER**

660  
1



8701



**Hand File** as per DIN 8331

8719



**Three Square File** as per DIN 8335

8722



**Round File** as per DIN 8338

8729



**Ignition File**

### DRIFT PUNCH

GEDORE-VANADIUM (VDEh 58 CrV 4)

Finish S = ground and varnished

351



### FLAT COLD CHISEL

GEDORE-VANADIUM (VDEh 58 CrV 4)

Finish S = ground and varnished

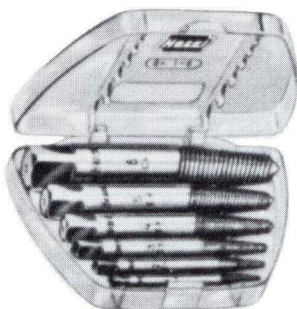
352



CAT. No. S 167

### STEEL TAPE MEASURES

LENGTH 2 METERS



### SCREW EXTRACTOR SET

CAT. No. Z 8551/66

FOR REMOVING SCREWS FROM DIA 1.4 - 16mm

CAT. No. N3-500

### WORKSHOP RULES



LENGTH 500mm (20"), WIDTH 30mm, THICKNESS 6mm  
WORKING EDGES FINELY SCRAPED, FLATS BEST MACHINED

CAT. No. R 200

200-mm  
8-in.

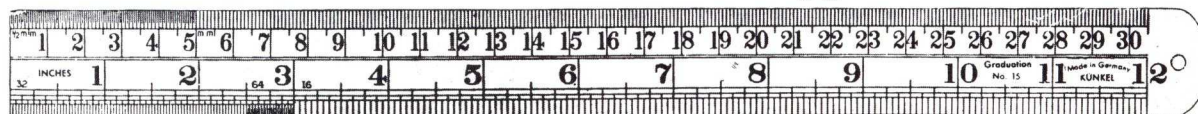
CAT. No. R 300

300-mm  
12-in.

CAT. No. R 500

500-mm  
20-in.

### STAINLESS STEEL FLEXIBLE RULES

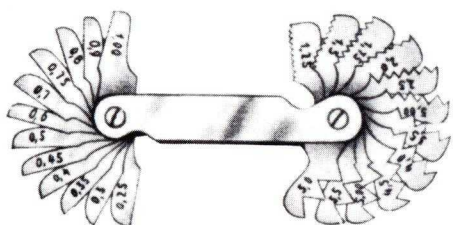


BOTH SIDES GRADUATED IN mm AND INCHES



# METRIC

## SCREW PITCH GAGES



**METRIC**

**CAT. No. 82**

20 BLADES PITCH 0.4-7mm METRIC THREAD 60°  
MEASURING RANGE M 2 to M 60mm

**WHITWORTH**

**CAT. No. 85**

28 BLADES MEASURING RANGE  $\frac{1}{16}$  to 2  $\frac{1}{2}$ "  
WHITWORTH THREAD 55°

**U.S. STANDARD**

**CAT. No. 87**

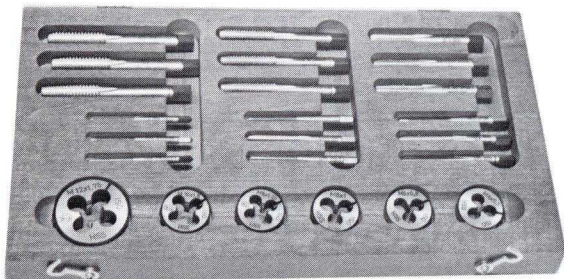
30 BLADES MEASURING RANGE 6 to 60 THREADS PER INCH  
U.S. STANDARD THREAD 60°

# METRIC CARBON

SIZES:  
M4x0.70 M5x0.80  
M6x1.00; M8x1.25;  
M10x1.50; M12x1.75 sets  
STEEL and M14 Spark Plug

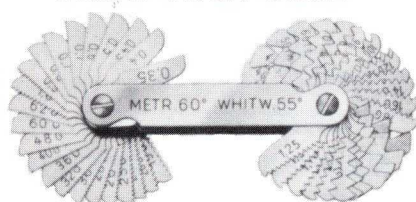
## TAP AND DIE SETS

**CS 28 IN WOODEN BOX**



## SCREW PITCH GAGE

**706**



**METRIC**

**WHITWORTH**

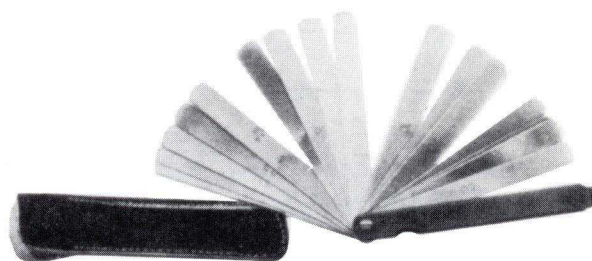
## PRECISION FEELER GAGES



**METRIC**

**CAT. No. A-23**

BLADES LENGTH 300mm COMBINED ON RING  
13 BLADES FOR GAGING: 0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.40, 0.50, 0.60, 0.70, 0.80, 0.90, 1mm



**METRIC**

**CAT. No. 804**

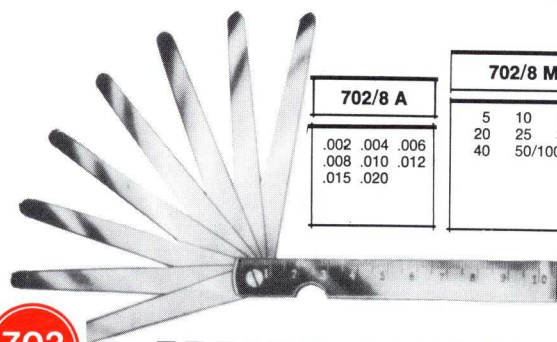
BLADES LENGTH 95mm WIDTH 10mm  
18 BLADES FOR GAGING: 0.04, 0.05, 0.06, 0.07, 0.08, 0.09, 0.10, 0.15, 0.20, 0.25, 0.30, 0.40, 0.50, 0.60, 0.70, 0.80, 0.90, 1.00mm



## SPECIAL SET OF FEELER GAUGES

for Tappets, Points and Spark Plugs

<b>1683</b>	Thickness mm
	27 - 30 - 34 - 37 -
	40 - 45 - 90 / 100



**702**

## FEELER GAUGES

Length of Blades 100 mm (4")

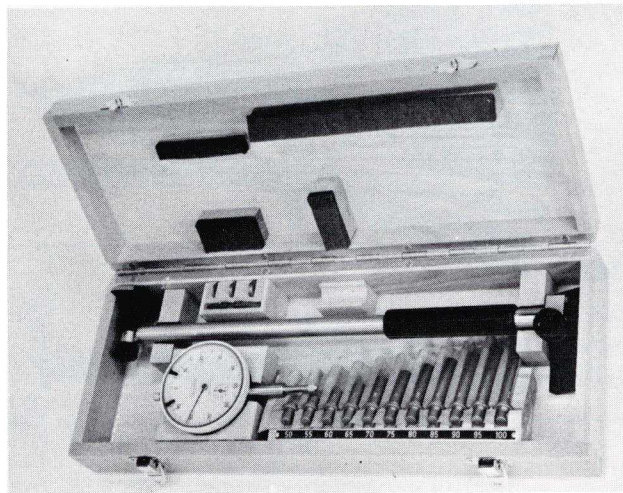
702/8 A	702/8 M
.002 .004 .006	5 10 15
.008 .010 .012	20 25 30
.015 .020	40 50/100





# METRIC

## HIGH PRECISION FINE BORE GAGE MICROMETERS ——— INDICATORS



### FINE BORE GAGE CAT. No. UG 74-I

MEASURING CAPACITY 12 - 20mm  
DEPTH CAPACITY 110mm

### FINE BORE GAGE CAT. No. UG 74-III

WITH 3 RODS  
MEASURING CAPACITY 18 - 100mm  
DEPTH CAPACITY 110 - 260mm

**"SUBITO"**  
**ACCURATE — SELF-CENTERING**

CAT. No. UG 74-II

### CAT. No. M 16-0-25

MEASURING CAPACITY 0 - 25mm, READING 1/100mm  
IN WOODEN CASE

### CAT. No. M 16-25-50

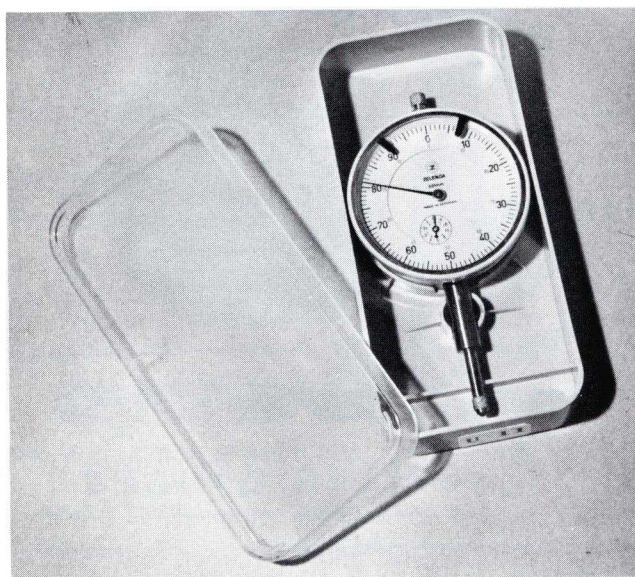
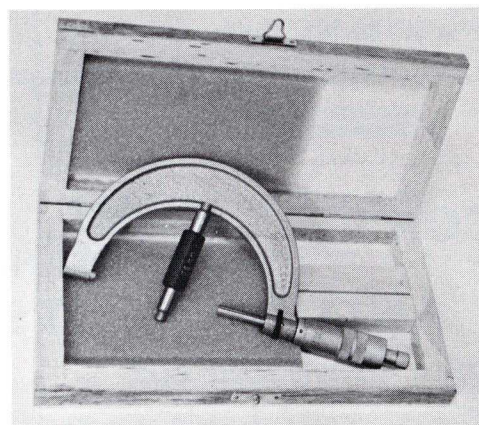
MEASURING CAPACITY 25 - 50mm, READING 1/100mm  
IN WOODEN CASE WITH CHECKING STANDARD

### CAT. No. M 16-50-75

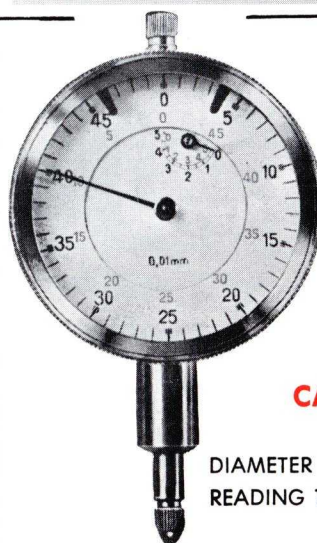
MEASURING CAPACITY 50 - 75mm, READING 1/100mm  
IN WOODEN CASE WITH CHECKING STANDARD

### CAT. No. M 16-75-100

MEASURING CAPACITY 75 - 100mm, READING 1/100mm  
IN WOODEN CASE WITH CHECKING STANDARD



CAT. No. U-11 DIAMETER 58mm (2¼")  
READING 1/100mm  
TRAVEL 11mm



CAT. No. U-2

DIAMETER 39mm (1½")  
READING 1/100mm, TRAVEL 5mm

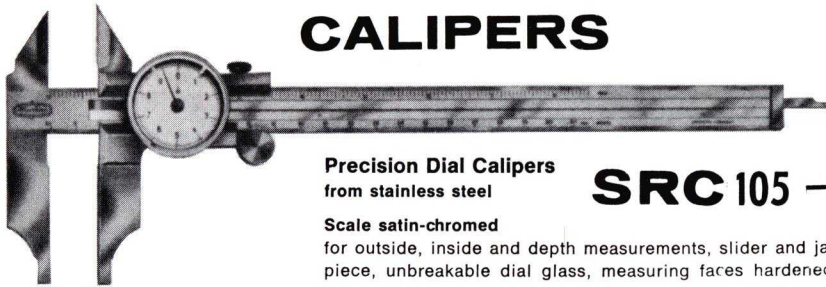
**MAGNETIC BASE FOR DIAL  
INDICATOR**

CAT. No. UM-1



# CALIPERS

# METRIC

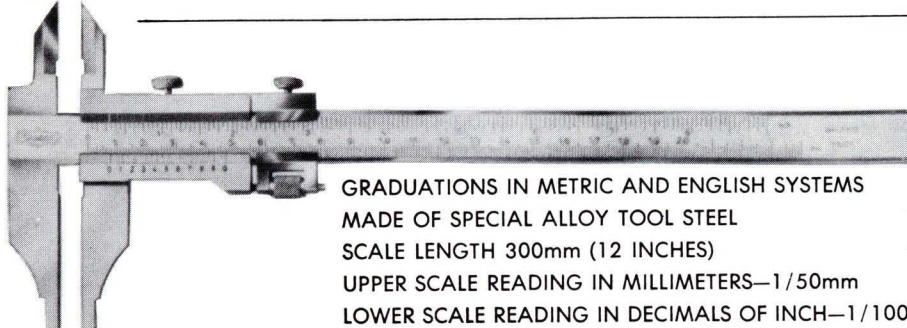


**Precision Dial Calipers**  
from stainless steel

**SRC 105 — 300 mm**  
**160 mm**

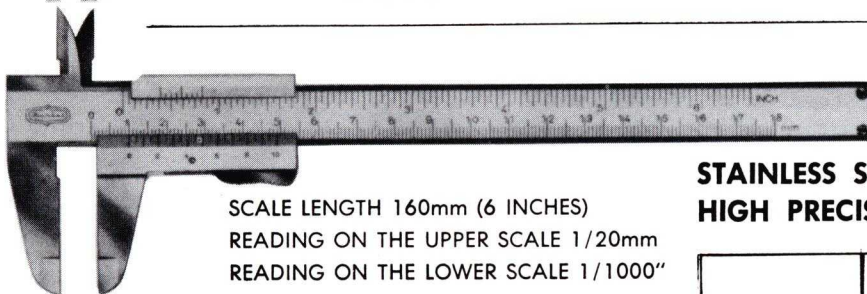
Scale satin-chromed

for outside, inside and depth measurements, slider and jaws made of one piece, unbreakable dial glass, measuring faces hardened.



GRADUATIONS IN METRIC AND ENGLISH SYSTEMS  
MADE OF SPECIAL ALLOY TOOL STEEL  
SCALE LENGTH 300mm (12 INCHES)  
UPPER SCALE READING IN MILLIMETERS—1/50mm  
LOWER SCALE READING IN DECIMALS OF INCH—1/1000"

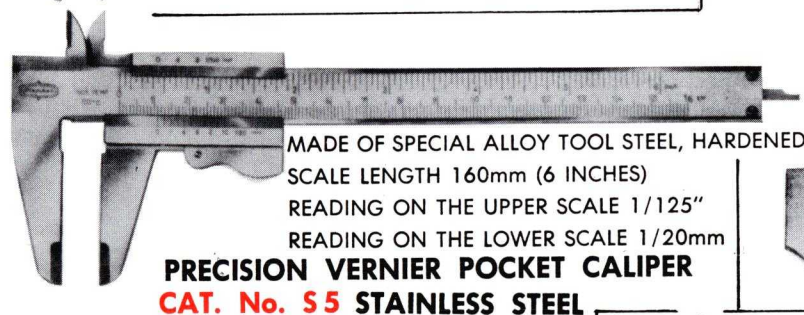
**CAT. No. S57**  
**PRECISION VERNIER CALIPER**  
**WITH FINE ADJUSTMENT**



SCALE LENGTH 160mm (6 INCHES)  
READING ON THE UPPER SCALE 1/20mm  
READING ON THE LOWER SCALE 1/1000"

**CAT. No. SR14**

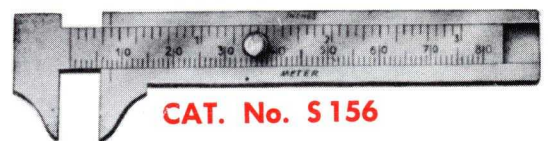
**STAINLESS STEEL "SATIN-CHROMED"**  
**HIGH PRECISION POCKET VERNIER CALIPER**



MADE OF SPECIAL ALLOY TOOL STEEL, HARDENED  
SCALE LENGTH 160mm (6 INCHES)  
READING ON THE UPPER SCALE 1/125"  
READING ON THE LOWER SCALE 1/20mm  
**PRECISION VERNIER POCKET CALIPER**  
**CAT. No. S5 STAINLESS STEEL**

**MINIATURE SLIDE CALIPER**

MADE OF BRASS  
MEASURING CAPACITY 100mm  
READING 1/10mm



**CAT. No. S156**

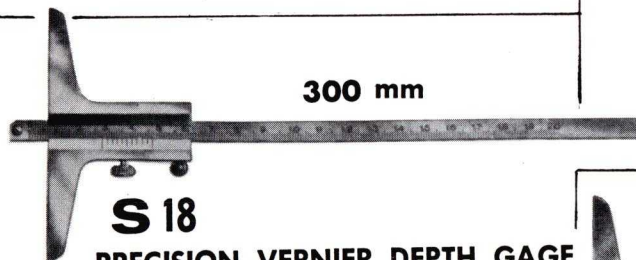


**CAT. No. S193**  
**PLASTIC POCKET SLIDE CALIPER**



**S124**  
**PRECISION VERNIER DEPTH GAGE**  
**WITH FINE ADJUSTMENT**

MEASURING CAPACITY 250mm (10 INCHES)



**S18**  
**PRECISION VERNIER DEPTH GAGE**  
**WITH FINE ADJUSTMENT**

**300 mm**



**PRECISION VERNIER DEPTH GAGE**  
**WITH FINE ADJUSTMENT**

MEASURING CAPACITY 250mm (10 INCHES)  
READING 1/50mm

**S113**





CAT. No.	FOR SCREW SIZE BSW & BSF	OPENING mm	OVERALL LENGTH Inches
450W-0034	<b>3/32-1/8</b>	6.5 - 7.5	6-1/4
450W-0068	<b>3/16-1/4</b>	8.4-11.3	6-3/4
450W-0810	<b>1/4-5/16</b>	11.3-13.3	7-1/2
450W-1012	<b>5/16-3/8</b>	13.3-15.2	8
450W-1214	<b>3/8-7/16</b>	15.2-18.0	9-1/4
450W-1416	<b>7/16-1/2</b>	18.0-20.8	10
450W-1618	<b>1/2-9/16</b>	20.8-23.3	10-1/2
450W-1820	<b>9/16-5/8</b>	23.3-25.6	11
450W-2024	<b>5/8-3/4</b>	25.6-30.5	12
450W-2832	<b>7/8 -1</b>	37.5-42.5	14

## BRITISH WRENCHES

CHROME-VANADIUM STEEL  
CHROME PLATED—BRIGHT HEADS



DOUBLE OPEN END WRENCHES

No. 450W

600W-04	<b>1/8</b>	7.5	6-1/2
600W-06	<b>3/16</b>	8.4	6-3/4
600W-08	<b>1/4</b>	11.3	7-1/2
600W-10	<b>5/16</b>	13.3	8-1/2
600W-12	<b>3/8</b>	15.2	10
600W-14	<b>7/16</b>	18.0	11
600W-16	<b>1/2</b>	20.8	12
600W-18	<b>9/16</b>	23.3	14-1/4
600W-20	<b>5/8</b>	25.6	15-1/4
600W-24	<b>3/4</b>	30.5	16-1/4



COMBINATION WRENCHES

No. 600W

630W-0046	<b>1/8-3/16</b>	7.5 - 8.4	8-1/4
630W-0068	<b>3/16-1/4</b>	8.4-11.3	8-3/4
630W-0810	<b>1/4-5/16</b>	11.3-13.3	9-1/4
630W-1012	<b>5/16-3/8</b>	13.3-15.2	9-3/4
630W-1214	<b>3/8-7/16</b>	15.2-18.0	11-1/4
630W-1416	<b>7/16-1/2</b>	18.0-20.8	12-1/2
630W-1618	<b>1/2-9/16</b>	20.8-23.3	13-1/4
630W-1820	<b>9/16-5/8</b>	23.3-25.6	14
630W-2024	<b>5/8-3/4</b>	25.6-30.5	14-1/2



DOUBLE OFFSET BOX END

WRENCHES No. 630W

DEEP OFFSET

CAT. No.	FOR SCREW SIZE BSW & BSF	OPENING mm	HEIGHT Inches
900WZ-06	<b>3/16</b>	8.4	1-1/2
900WZ-08	<b>1/4</b>	11.3	1-1/2
900WZ-10	<b>5/16</b>	13.3	1-1/2
900WZ-12	<b>3/8</b>	15.2	1-1/2
900WZ-14	<b>7/16</b>	18.0	1-1/2
900WZ-16	<b>1/2</b>	20.8	1-3/4
900WZ-18	<b>9/16</b>	23.3	1-3/4
900WZ-20	<b>5/8</b>	25.6	1-7/8
900WZ-22	<b>11/16</b>	28.0	1-7/8
900WZ-24	<b>3/4</b>	30.5	2



1/2" DRIVE BRITISH SIZES SOCKETS

No. 900WZ



# METRIC TOOL KIT

## IN LARGE TOOL CHESTS AND METAL CASES



**NO.145**

**3 Drawer Metal Chest**  
 22 5/8" Wide, 10 1/8" Deep, 10" High  
 Top Drawer—20 1/8" x 8 5/8" x 1 1/2"  
 Middle Drawer—20 1/8" x 8 5/8" x 2"  
 Bottom Drawer—20 1/8" x 8 5/8" x 2 1/2"

Heavy gauge steel, well reinforced and generously spot welded. Strong cylinder lock actuates bar that secures drop cover at both ends. TT-2 tote tray is furnished to fit top compartment.

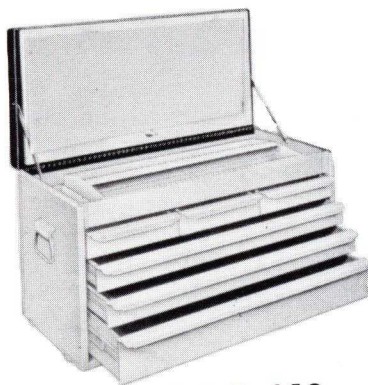
145 pcs. set: wrenches, sockets adapters, T handle, gauge, rules chisel, punch, etc.



**NO.71**

71 pcs. set:  
 Wrenches, sockets, flexible handle, screw driver, plier, cutter, hex key set, hammer, etc.

DETAILED LISTS OF ALL THE CONTENTS IN EACH OF THESE CHESTS AND METAL CASES ARE AVAILABLE ON REQUEST.

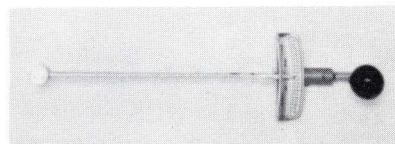


**NO.168**



168 pcs. set.

## TORQUE WRENCHES



SP50

TORQUE WRENCH, 3/8" DRIVE. 0-50 Inch Pound Scale Type.



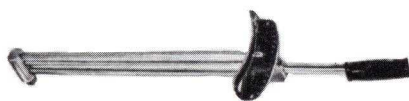
118/40

TORQUE WRENCH, 3/4" Drive, Dual Scale, 0-40 mkg. 300 Lbs. In Meter Kilogram and Foot Pound.



118/6H

TORQUE WRENCH, T-Handle, 1/2" Drive, Up to 6 mkg.



118/20

TORQUE WRENCH, 1/2" Drive, Dual Scale, 0-20 mkg. 150 Lbs. In Meter Kilogram & Foot Pound.

SPECIAL TORQUE WRENCH, 0-2 mkg, 3/8" Drive



118/2





## PRECISION SPECIALS FOR INDUSTRY

Short or long run specials to your specifications. Tolerances of  $\pm .001$  are regularly maintained for various commercial products. Skilled machinists insure high standards of quality and precision work in both inch and metric systems. Estimates can be prepared promptly from samples or blueprints.

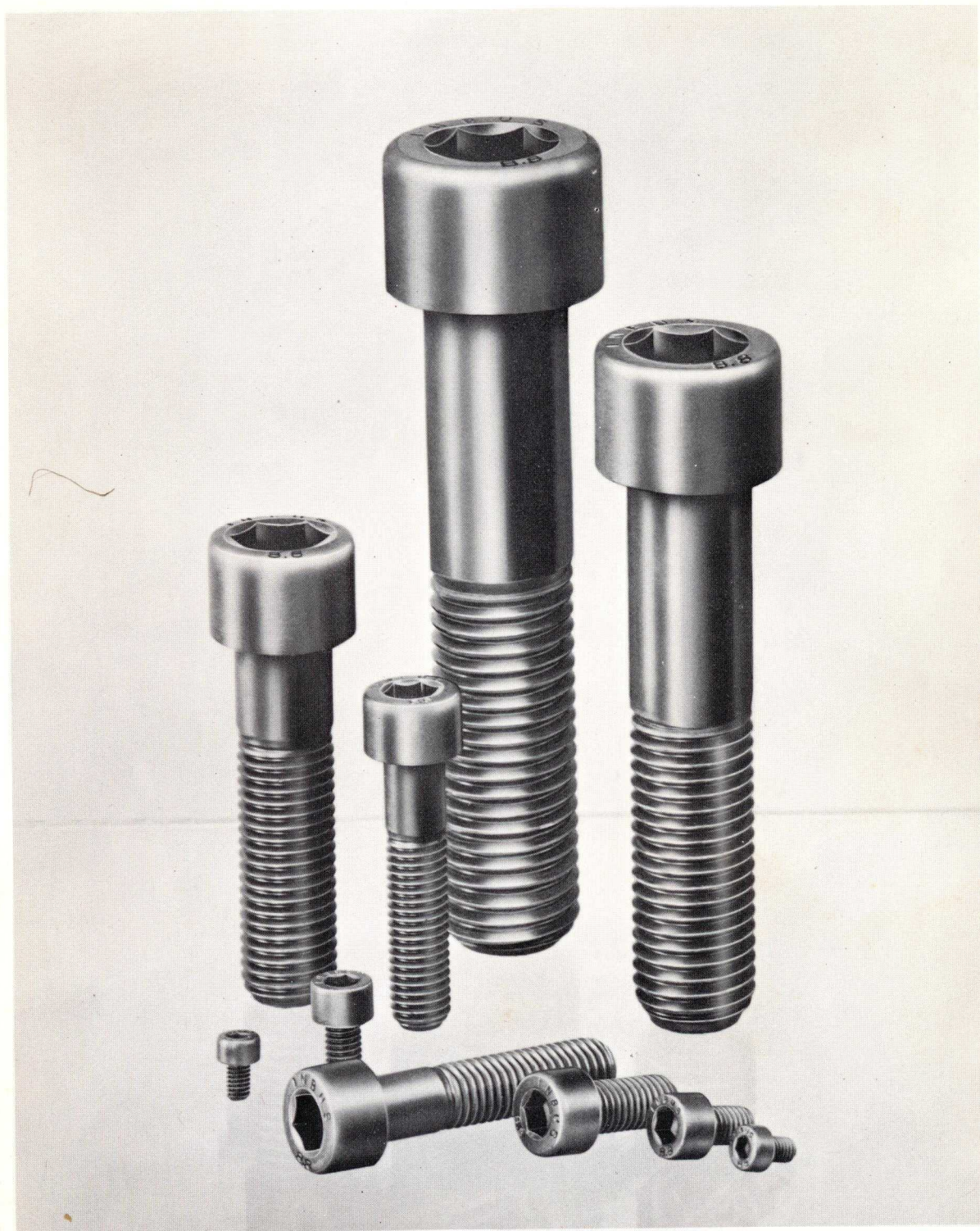
### FACILITIES :

- |  |   |
|--|---|
| 3 Accuratool fully automatic turret lathe up to 1" maximum collet capacity with plugboard program control.                       | 2 High speed Center lathe. Spindle bore capacity 1-9/16".   |
| 2 DSM 59 High Speed Super precision second operation machine collet capacity 1-1/16".  | 1 Hydraulic copying attachment.   |
| 1 Model HTC-CFR High Speed Super precision chucking machine with 8 station turret .Collet capacity 1-1/16. Chucking capacity 6". | 2 High Speed precision lathe .Collet capacity 1".   |
| 2 Engine lathe spindle bore 2" swing over bed 17-5/16".  | 1 VHF-3 Abene Sweden. Horizontal milling machine. Working surface of table 48"x10" Longitudinal table travel 29-1/2". |
| 1 Logan Lathe 14". Spindle Bore 1-3/8". Draw in collet capacity 1-1/16".   | Excello 602 ram turret vertical milling machine Work surface of table 9" x 42".                                       |
| 1 Ram type turret lathe spindle 2-3/32" maximum bar capacity 1-31-32".   | 1 Mas horizontal milling machine. Working surface of table 11-13/16" x 53-5/32".                                      |
| 1 Herbert Universal ram type turret lathe . Maximum bar capacity 1-5/8". Spindle bore 2".  | 1 Super vertical milling machine model 55HS with indexing head and rotary table capacity to 2".                       |
|  | 1 Vertical milling machine model FA 3 V. Working surface of table 9-7/32x 49-7/32.                                    |

40 ton hydraulic press.      -      20 ton hydraulic press.      -      22 ton Johnson press      -      Arc welder  
Drill presses      -      Acetylene welder      -      Power saws      -      Dry abrasives cutting machines.  
Surface grinder      -      Carbide tool grinder      -      Air grinder      -      Tumbling machines      -  
Rockwell C hardness tester      -      Finish tester      -      Microfinish comparator      etc.....



**ZELEDA**



**METRIC**





**CATALOG No.8**

**ZELEDA MACHINE AND TOOLS CORP.**

**66-02 AUSTIN STREET — FOREST HILLS, N. Y. 11374**

TELEPHONE (AREA CODE 212) TW 6-2288